

3070 Board Test Systems

System Installation Manual (MS Windows Version)

June 2003



Agilent Technologies

System Installation Manual (MS Windows Version)

E9970-90001 Rev. H 06/2003

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MS Windows System Installation Procedure

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CAUTION



This system should only be installed by an Agilent 3070 service-trained customer engineer (CE).

Testhead boot conflicts may occur if this system is on a network with 3070 UNIX controllers with IP addresses other than in the 10.3.112.XX series.

See [Configuring the System to a Network](#) on page 1-22 for more information.

In this Chapter...

- [Tools Required](#), 1-2
- [Getting Started](#), 1-3
- [Setting Up the KVM and Support Arms](#), 1-5
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Referenced Manuals

These manuals are referenced in this manual:

- *Agilent 3070 Site Preparation Manual* (E9900-90045).
- *Administering Agilent 3070 MS Windows Systems*.
- *Agilent 3070 / 79000 Repair Manual*.

CAUTION



Some customers change **Regional Options** on the controller to set **Your locale** to their geographic location. It is alright to do this as long as you don't change **Decimal symbol**. The **Decimal symbol** must remain a period (.); it cannot be changed to a comma (,) or Board Consultant will damage testplans.

Tools Required

These tools are needed in addition to the tools supplied with the system shipment:

- BNC-to-dual banana coaxial cable 11001-60001, for Diagnostics,
- BNC(F)-to-BNC(F) (barrel) connector 1250-0080, for Diagnostics,
- Pin Verification Fixture (PVF) for Diagnostics:
 - E3771B for one-module systems,
 - E4033B for one to four-module systems,
 - N4355A 2-Bank No-Wire Interface PVF (only required with No-Wire fixture,)
- T10 & T20 Torx drivers,
- #2 Phillips or Posi screwdriver,
- 1/4-inch flat blade screwdriver,
- 5- and 10-mm hex key wrenches,
- Diagonal-cutters to cut straps,
- Utility knife to open boxes,
- 7/16-inch and 9/16-inch, 3/8-inch square-drive sockets,
- 6-inch-long, 3/8-inch square-drive extension,
- 3/8-inch square-drive ratchet,
- Cordless drill – 14.4 Volt, 3/8-inch drill / driver kit.

Getting Started

Verify Site Preparation Complete

Typically, the *Agilent 3070 Site Preparation Manual* (03066-90114) is delivered to the customer by an Agilent representative one month prior to system shipment. A copy can also be found included with the system shipment. From the site prep. manual:

- 1 View the customer's completed site preparation checklist.
- 2 Ask the customer for a copy of the system plan drawing or have them select the appropriate layout from Chapter 3.

Check for Shipping Damage

If damage is found, contact Agilent's Manufacturing Test Business Unit, Order Administration:

- Inside the United States call (970) 679-2261.
- Outside the United States call (970) 679-3155.

Check the Shipment Against the Order Before Uncrating

Un-crate the System

Follow the un-crating instructions attached to the pallet ramp.

Check the System and the Contents of all Crates and Boxes Against the Order

For 3070 systems, the label on the lower right corner of the rear of the testhead cradle identifies the module capacity as shown in [Table 1-1](#).

Table 1-1 The testhead label identifies the module capacity

Label Contains Text	Module Capacity
E9900	4
E9998	2
E9997	1

NOTE

Testheads with capacities for more than one module can be configured with fewer modules. Additional modules can be added later.

Check that:

- A support bay is included with four-module systems to hold DUT power supplies.
- The strip printer, tape cartridges, licenses, and documentation is included.
- The bag on the testhead includes:
 - A pod key,

- A probe cradle,
 - Certificates of calibration,
 - A Certificate of Hardware Address for the System Card, and
 - Configuration printouts.
- The bag on the testhead cradle includes:
- An *Agilent 3070 Family Site Preparation Manual*, (03066-90114)
 - Some tools,
 - A female quick-disconnect compressed air fitting, and
 - An Installation Kit 03066-69902 (it contains various tools and parts.)

Setting Up the KVM and Support Arms

This section contains:

- [Introduction](#), 1-5
- [Install the KVM and Support Arms](#), 1-5
- [Adjust the Support Arm Tension](#), 1-15

Introduction

The default location for the KVM (Keyboard, Video Monitor, Mouse) installation is on the right side of the testhead, when facing the testhead from the front.

The customer can be accommodated if a preference exists for having the KVM on the left side. To do this, the pod cover(s) must be removed, then the KVM wiring must be re-routed.

Install the KVM and Support Arms

Follow the instructions given in [Table 1-2](#). Additionally, [Figure 1-2](#) on page 1-12 shows the right side installation detail, and [Figure 1-3](#) on page 1-13 shows the left side installation detail.

Table 1-2 Install the KVM and support arms

Task	Step
1 Remove the two shipping bolts.	Do this so that the testhead can be rotated. Figure 1-1 on page 1-11 shows the location of the shipping bolts.
2 If the KVM will be installed on the left (non-default) side, follow the steps for this task. Otherwise, continue with Task 3 .	CAUTION  Before rotating the testhead, remove all objects including the monitor and keyboard support arms from the rotational path of the testhead. During rotation, should the testhead hit anything, damage could result. CAUTION  Remove the shipping bolts before attempting to rotate the testhead. Otherwise, damage can result. Shipping bolts can be stored for later use in the holes used by the testhead pallet shipping brackets. Remove pod cover: a If testhead connectors (BNC) are visible over a pod cover, rotate the testhead about 10 degrees to allow the pod cover to be removed. Apply PDU power to activate the testhead rotation switch. See Powering the PDU and Controller on page 1-21. b Use a T20 Torx driver to remove the pod-cover screws and then remove the pod cover. c Remove power to the PDU if connected.

Table 1-2 Install the KVM and support arms (continued)

Task	Step
3 Install the support arms:	CAUTION  Install the support arm T-piece to the front of the system. Damage may occur during testhead rotation if the support arm T-piece is positioned to the rear.
	a Open the pod door. b If present, pry the plastic square plug from the top of the mounting arm post. c Unpack the support arms and the monitor and keyboard trays. d Install the post of the support arm T-piece (E9900-10245), in the appropriate column. 1) If the pod door is in the way, remove it by lifting it up, then out. Replace it when done. 2) Secure the post using a 1/4-inch hex key wrench, two each cap screws (3030-1044), and lock washers (2190-0963). For 307X, 317X and 327X systems, use the top and middle screw holes. e Insert the 13-cm (5-inch) extension riser (E9900-10246), into the hole of the support arm T-piece that is farthest from the operator. f If needed, install the square plastic cap in the top of the unused support arm column.

Table 1-2 Install the KVM and support arms (continued)

Task	Step
4 Install the keyboard tray:	a Insert the keyboard support arm E9900-10248, in the hole in the support arm T-piece. b Install the keyboard tray E9900-10247, on the keyboard support arm using a Phillips or Posi screwdriver and four flat-head screws, 3030-0219, in the end of the arm: ■ Choose one of the center sets of holes for mounting. Other mounting hole sets can be selected at the customer's request. ■ Install the keyboard tray so that the tilt adjuster knob can be adjusted from the front of the keyboard.
5 Position the KVM:	a Unpack the keyboard and mouse and place them on the keyboard tray. b Place the plastic keyboard overlay on the keyboard. c Install the monitor support arm. d Install the monitor tray on the support arm. e Unpack the video monitor, then mount it on the support arm with its included screws. f Locate the mouse and mouse pad, then place them on the keyboard tray.

Table 1-2 Install the KVM and support arms (continued)

Task	Step
6 Route the KVM cables:	CAUTION If the KVM cables are not routed with enough slack, they can be damaged when the support arms are adjusted. Figure 1-4 on page 1-14 describes this further. NOTE The keyboard and mouse is shipped with long enough cables to accommodate installation on the left side. They are folded back on themselves in the testhead cable trough (identified in Figure 1-1 on page 1-11). For 307X and 317X systems, a second video monitor cable is pre-installed to accommodate KVM installation on the left side. For 327X systems, the existing video monitor cable is long enough to reach to the left side. Re-route it through the testhead cable troughs. Cut cable ties inside the pod, if necessary. It may be necessary to obtain a 8120-1763 power cord extension cable to connect power from the PDU to the video monitor. Route the power cable through the testhead cable trough. • Route the KVM cables through the support arm cable troughs.

Table 1-2 Install the KVM and support arms (continued)

Task	Step
7 Connect the KVM cables:	NOTE The USB connectors on (the left side of) the video monitor are not used.
	a Remove the cover from the rear of the video monitor, then connect the power and signal cables. b Replace the rear cover. c Connect the keyboard and mouse cables.
8 Install the barcode scanner cables:	a Insert the bar code scanner cable between the keyboard cable and the keyboard extension cable. b Route the bar code scanner cables through the support arm cable troughs.
NOTE Perform this task only if installing an optional barcode scanner. Otherwise, continue with Task 9 .	
9 Tidy and secure all cables.	Use new cable ties where necessary.
10 Replace pod cover and door.	Re-install the pod door and use a T20 Torx driver to replace the pod cover screws.

Figure 1-1 Rear of testhead

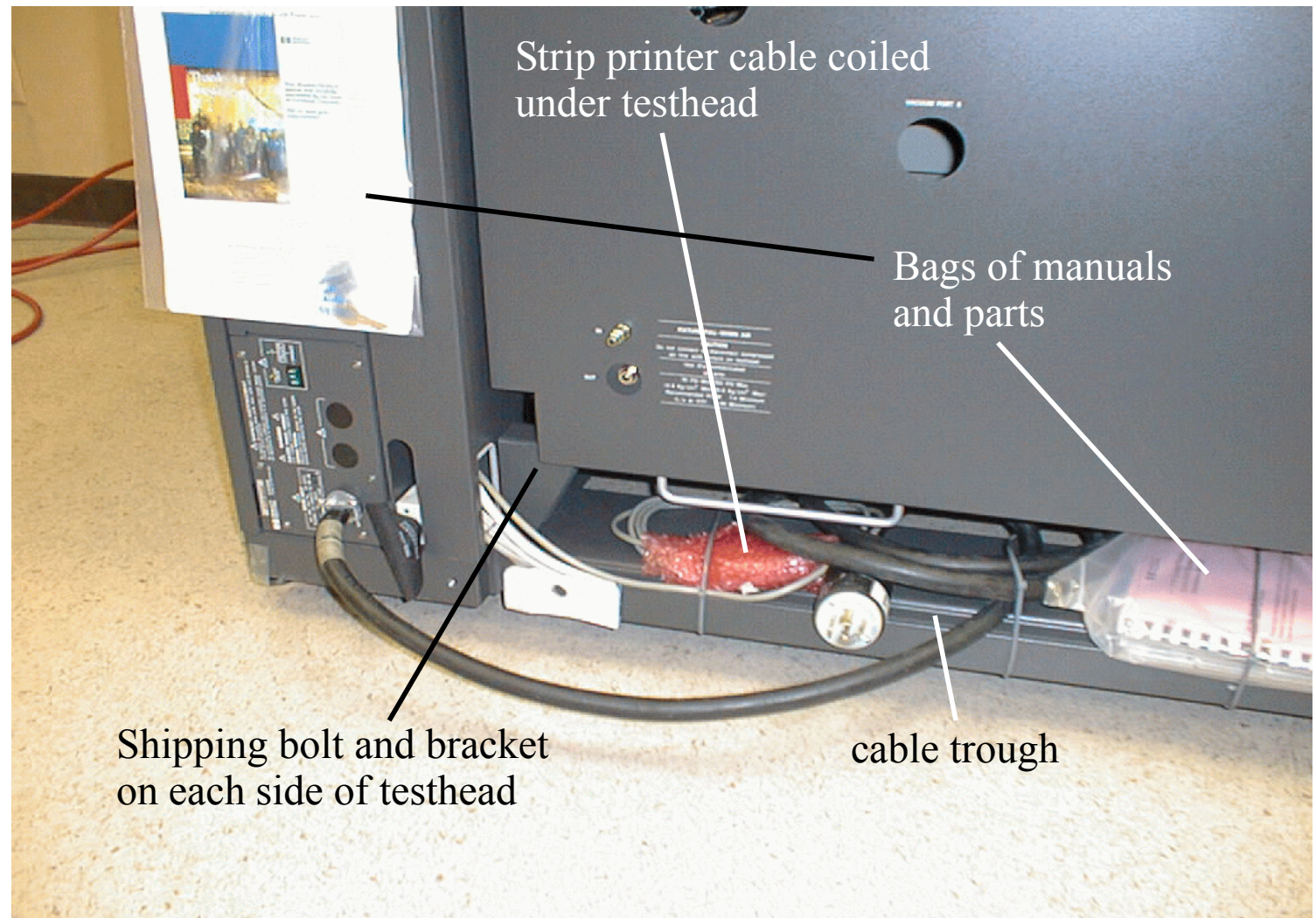


Figure 1-2 KVM and support arm detail for the right side of the testhead

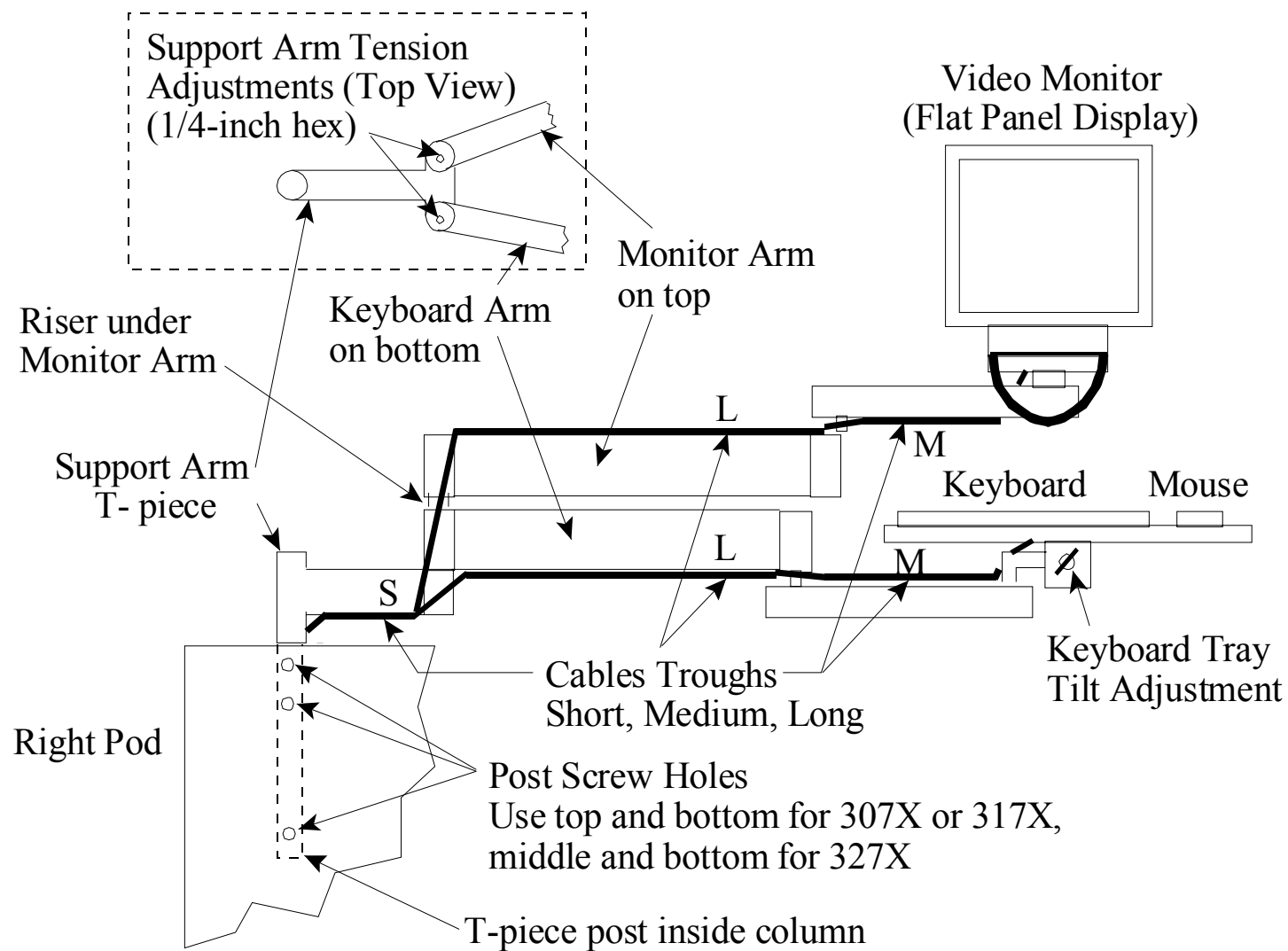


Figure 1-3 KVM and support arm detail for the left side of the testhead

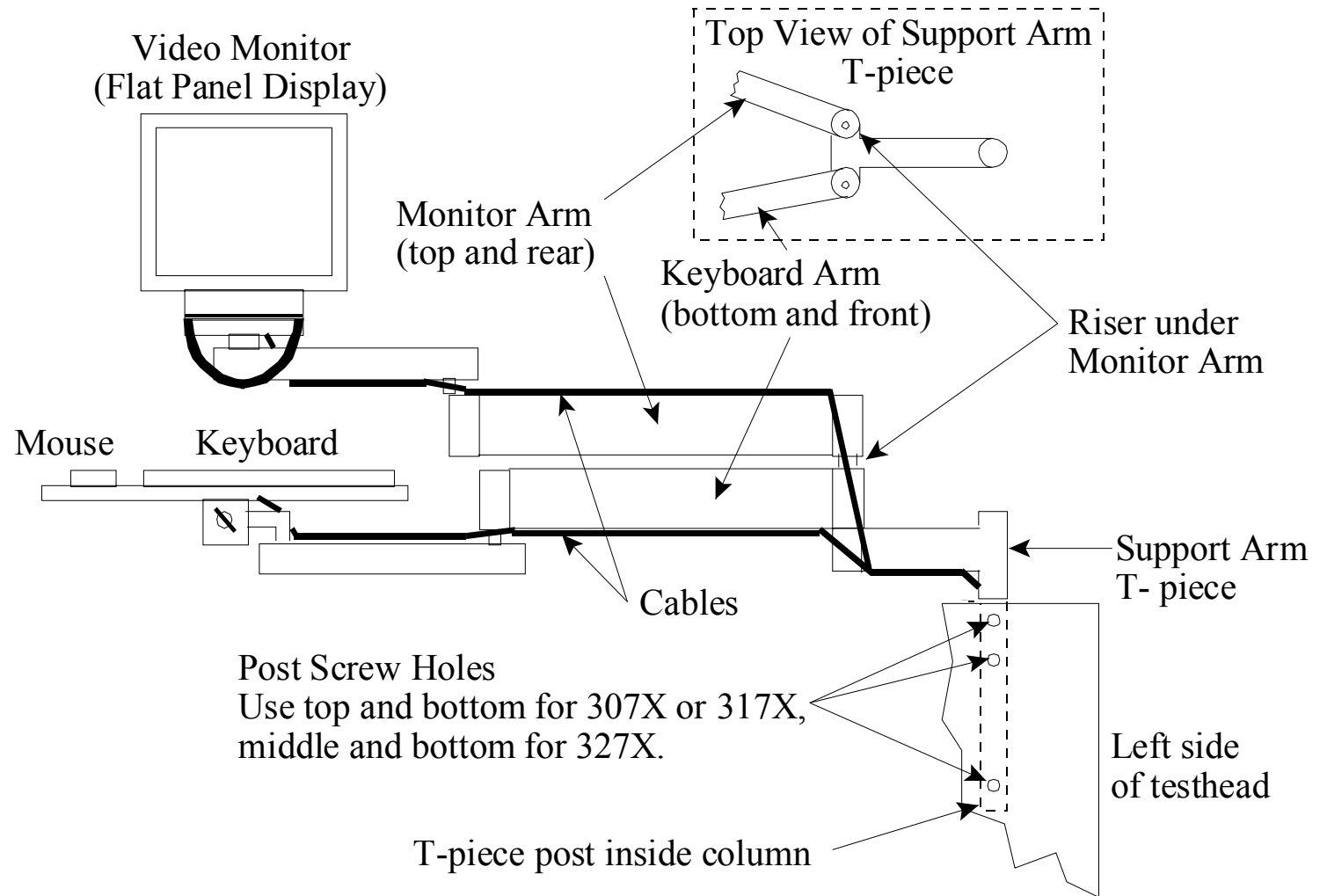


Figure 1-4 Allow enough slack when routing cables



Adjust the Support Arm Tension

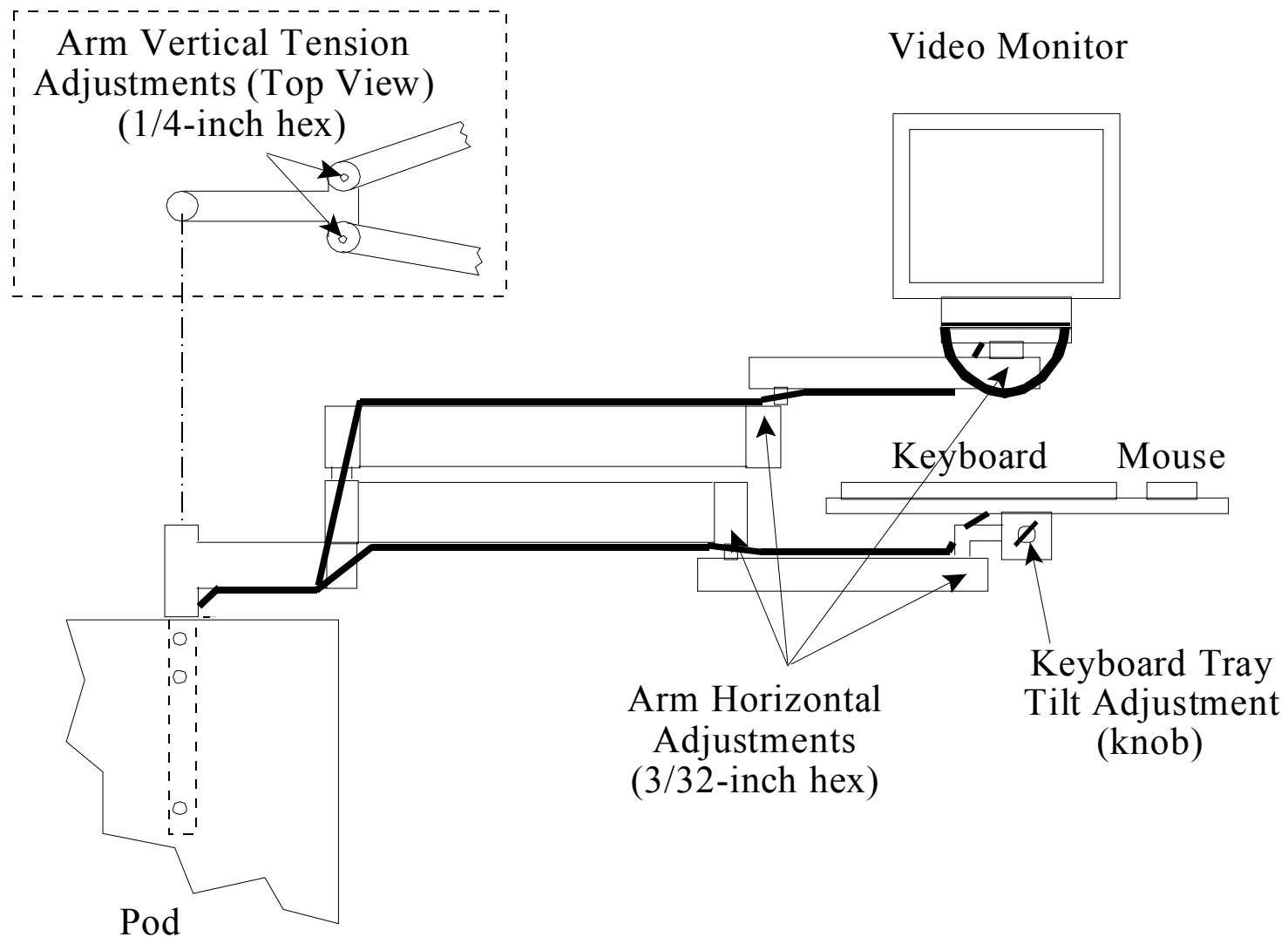
There are two types of support arm tension adjustments: vertical and horizontal.

Use [Table 1-3](#) on page 1-15 and [Figure 1-5](#) on page 1-16 to adjust the support arm tension.

Table 1-3 Adjust the support arms

Task	Step
1 Adjust the support arm vertical tension:	Use a 1/4-inch hex key wrench to adjust the monitor and keyboard support arm vertical tension adjustment screws: Turn the screw clockwise to make the arm tension harder, and counterclockwise to make the arm tension easier. These screws are approximately 48 turns stop-to-stop.
2 Adjust the support arm horizontal tension:	Use a 3/32-inch hex key wrench to adjust the joints in the support arms to a firm but movable tension.

Figure 1-5 Adjust the support arms



Setting Up the Strip Printer

This section contains:

- [Install the Strip Printer Tray, 1-17](#)
- [Install the Strip Printer, 1-17](#)

Install the Strip Printer Tray

Unpack the strip printer tray and install it in the testhead column opposite the monitor and keyboard.

A plastic cover may need to be pried out of the top of the column first.

Install the Strip Printer

- 1 Unpack the strip printer and place it on the strip printer tray.
- 2 Connect the pre-routed power and data cables.

NOTE

To install the strip printer on the left side, re-route the power and data cables through the testhead cable trough.

Preparing the Testhead

This section contains:

- [Install the Footswitch, 1-18](#)
- [Install the Probe and Probe Cradle, 1-19](#)
- [Install the Fixture Pull-Down Label -- Non-English Only, 1-19](#)
- [Attach the Site LAN Cable, 1-20](#)

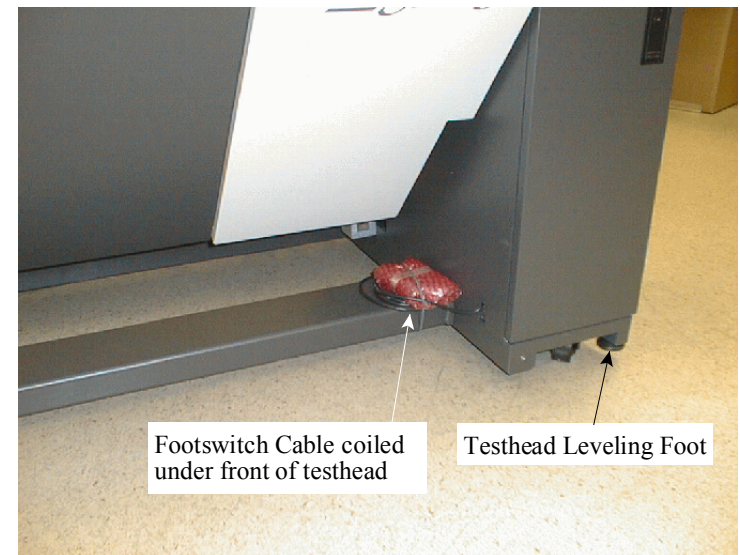
Install the Footswitch

NOTE

With software revision 3070 05.20p and later, the footswitch **must** be connected to the system. The footswitch must be pressed to lock fixtures on the testhead.

- 1 Locate the footswitch and cable that are coiled on the front of the testhead cradle.
See [Figure 1-6](#) for locations.
- 2 Unpack the footswitch and place it on the floor in front of the testhead.

Figure 1-6 Location of the footswitch and leveling foot



Install the Probe and Probe Cradle

The probe cradle (**Figure 1-7**) is located on the pod cover of the testhead as shipped from the factory. If the customer wants the probe in a different location, an extra strip of sticky-backed hook-and-loop fastener is provided with the system so you can re-locate the probe cradle.

WARNING

 Do not place the probe cradle where it could interfere with an overhanging test fixture, thereby presenting a pinch hazard between the fixture and the probe cradle.

Do not place the probe cradle where it could interfere with testhead rotation.

- 1 Peel the backing paper off the hook-and-loop fastener and affix the fastener where the customer wants it (see the Warning above).
- 2 Move the probe cradle to the new location:
 - a Rotate the cradle sideways to separate the fastener.
 - b Press the probe cradle firmly onto the hook-and-loop fastener you just installed.
- 3 Unpack the probe and insert it in the probe cradle.

Figure 1-7 Probe cradle (E9900-66400)



Install the Fixture Pull-Down Label -- Non-English Only

If installing the system in an English-speaking country, skip this step.

- 1 Locate the Fixture Pull-down Air Labels (E9900-84316).
- 2 Choose the label that is of the correct language for the location and apply it over the English text that is silk-screened on the rear of the testhead near the compressed air connectors.

Attach the Site LAN Cable

Complete this instruction only if the system will be connected to a network.

- Connect the RJ45 plug from the site Ethertwist LAN cable to the RJ45 coupler at the rear of the pod.

NOTE

An RJ45 coupler should be visible from the rear of the controller's pod. It should not be necessary to remove the pod cover to attach the site LAN cable.

Powering the PDU and Controller

This section contains:

- [Supply Power to the PDU, 1-21](#)
- [Switch on the Controller, 1-21](#)
- [Configuring the System to a Network, 1-22](#)
- [Logon as service3070 to Complete the Installation, 1-22](#)

Supply Power to the PDU

CAUTION



Disconnect testhead power before connecting or disconnected testhead cables. Otherwise, damage can result.

- 1 Connect the PDU power cable to the power source:
Instructions for connecting power are given in the *Agilent 3070 / 79000 Family Site Preparation Manual 03066-90114*, which is shipped in print with the system.

NOTE

The PDU is not serviceable; if it is defective, it must be replaced.

WARNING



DO NOT open the PDU for any reason. Voltages capable of causing injury or death are present inside the PDU, even with the switches off.

- 2 Switch on the **Mains Disconnect Switch**:

The PDU has two switches, both of which are accessible from the rear of the pod:

- One is the green **Switched Circuits Enabled** rocker switch that enables power to the testhead – DO NOT switch this one on yet.
- The other is the large, red rotary **Mains Disconnect Switch** that enables power to the PDU outlets, video monitor, and system controller – switch only this one on now.

Switch on the Controller

- 1 Switch on the video monitor.
- 2 Open the pod door and switch on the controller.

NOTE

A line of random characters may be printed on the strip printer. This is normal and should be ignored.

NOTE

If the MS Windows registration key is needed, it can be found on the testhead controller after removing the pod cover.

Configuring the System to a Network

This is usually done with the assistance of the site network administrator and the Agilent systems engineer (SE). Either:

- Configure the network now OR
- Close the configuration window(s), and configure the system to a network later.

Instructions for configuring the system to a network can be found in *Administering Agilent 3070 MS Windows Systems* (shipped in paper with the system).

NOTE

If you are setting up a network with other UNIX-based 3070 systems, be aware that the IP address of 3070 UNIX systems changed from the HP 15.3.112.XX series to the Agilent 10.3.112.XX series. This occurred with the 3070 UNIX software release B.03.80.

Logon as `service3070` to Complete the Installation

If it should be necessary to change the logon:

- 1 Press together **<CTRL> <Alt> <Delete>**.
- 2 Click **Log Off**.

Wait for the log off, then follow the on-screen instructions to log back on.

- 3 Enter the logon information:

- Logon Name = **service3070**
- Default Password = **service**

Installing a Support Bay and Instrument Rack

This section contains:

- [Introduction](#), 1-23
- [Install the Testhead Module Umbilical Cable\(s\) \(307X Only\)](#), 1-23
- [Install the GPIB Cables \(307X Only\)](#), 1-24

Introduction

Complete instructions in this section if installing a support bay or instrument rack.

If an instrument rack is included containing instruments requiring GPIB control, see [Install the GPIB Cables \(307X Only\)](#) on page 1-24.

CAUTION



Follow proper ESD precautions while performing tasks in this section.

Remove power to the testhead by powering-off the PDU to prevent electrical damage when connecting cables.

Install the Testhead Module Umbilical Cable(s) (307X Only)

NOTE

Umbilical cables consist of DUT power supply wires, a ground wire, coaxial functional port wires, and PDU branch control wires.

One umbilical cable is used per testhead module.

Route each umbilical cable directly through the door of the respective testhead module (cabling no longer passes through a cable clamp panel in the testhead).

Reference [Figure 1-8](#) on page 1-25 for these steps:

- 1 Apply PDU power, rotate the testhead to the service position, then remove PDU power.

CAUTION



Remove the shipping bolts before attempting to rotate the testhead. Otherwise, damage can result.

Before rotating the testhead, remove all objects, including the monitor / keyboard support arms, from the rotational path. Damage could result if the testhead hits anything during rotation.

- 2 Remove the testhead module door locking bracket.

- 3 Locate the two access plates on a testhead module door.
- 4 Use a T20 Torx driver to loosen the plate covering the smaller hole then turn the plate around to expose the hole.

NOTE

The smaller hole is for the umbilical cable; the larger hole is for the optional AccessPlus cables.

- 5 With the testhead module door open, connect all umbilical cable DUT power supply connectors to the ASRU Card.

See **Figure 1-14** on page 1-32 for the ASRU card connectors.

- 6 Connect the ground wire to the ground lug on the side wall of the testhead module.
- 7 Connect both of the white coaxial cables to the functional ports on the ASRU card. See **Figure 1-14** on page 1-32 for the ASRU card connectors.

Install the GPIB Cables (307X Only)

- Route the GPIB cable from the support bay, and connect the GPIB cable plug to the controller's GPIB card port.

CAUTION



If multiple racks or bays are installed containing equipment needing GPIB control, connect the GPIB cabling as shown in **Figure 1-9** on page 1-26.

If the cable connections fork, GPIB errors may occur.

Figure 1-8 Cable the testhead to the support bay

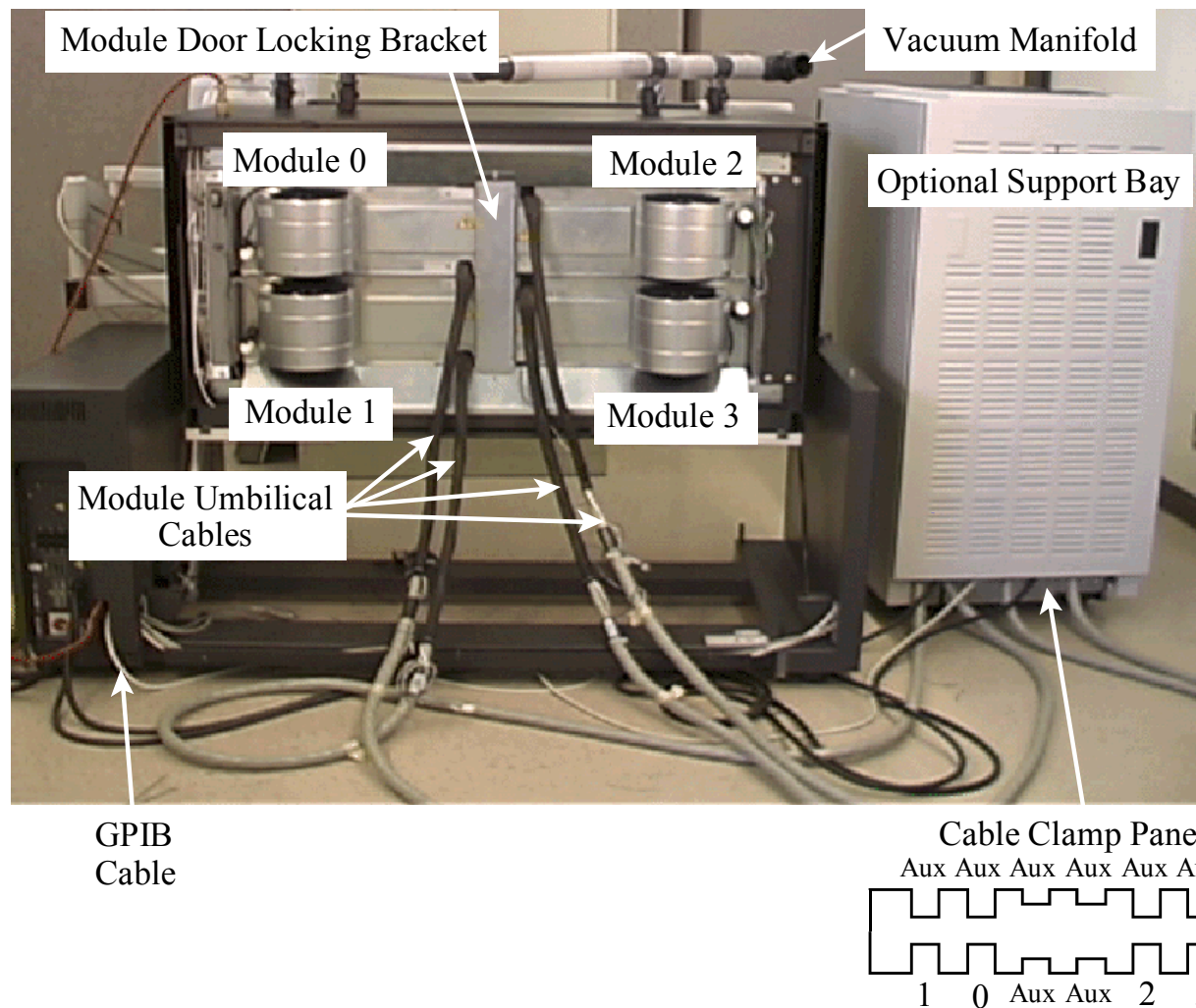
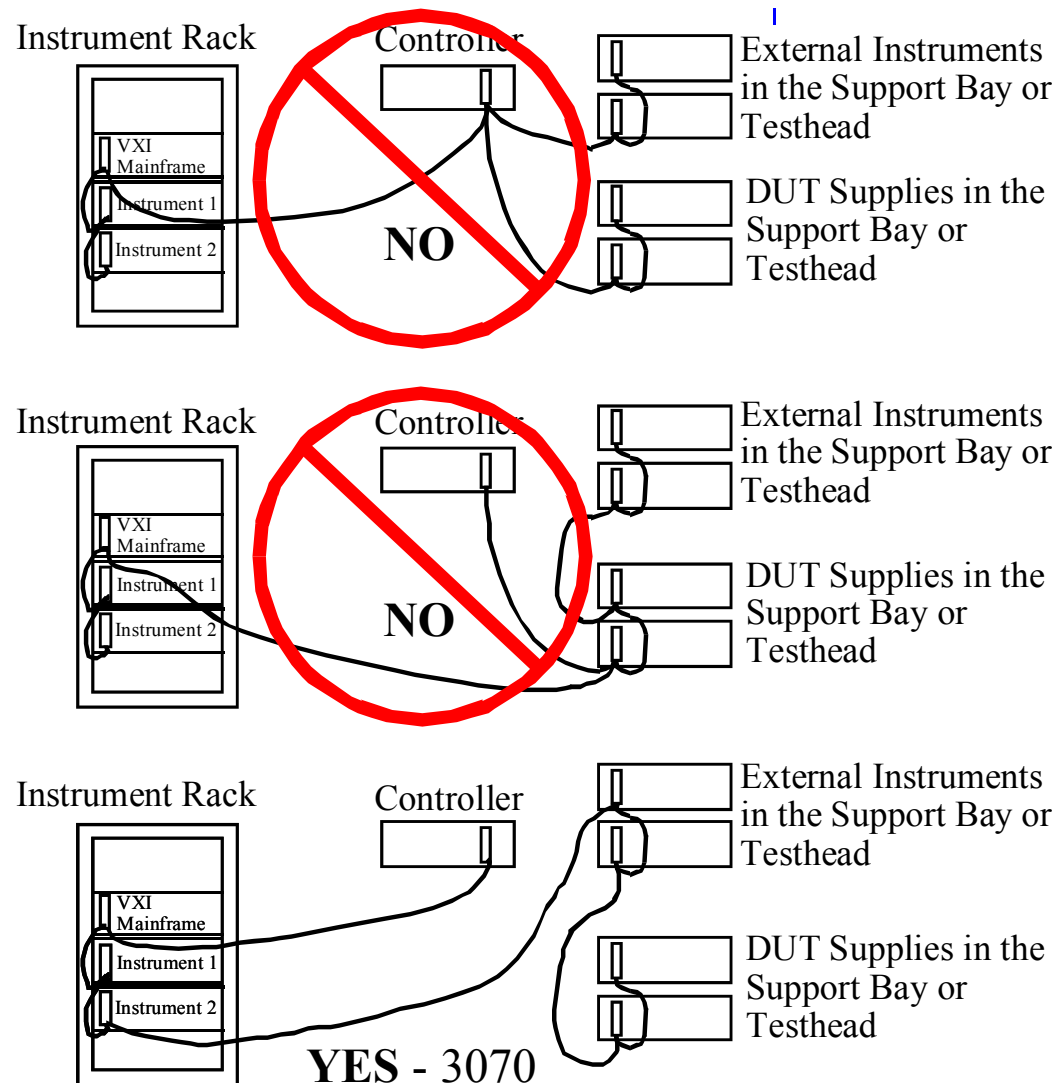


Figure 1-9 GPIB cables to an instrument rack, support bay, and controller. DO NOT allow the GPIB cabling to fork



Setting-Up Other Hardware

This section contains:

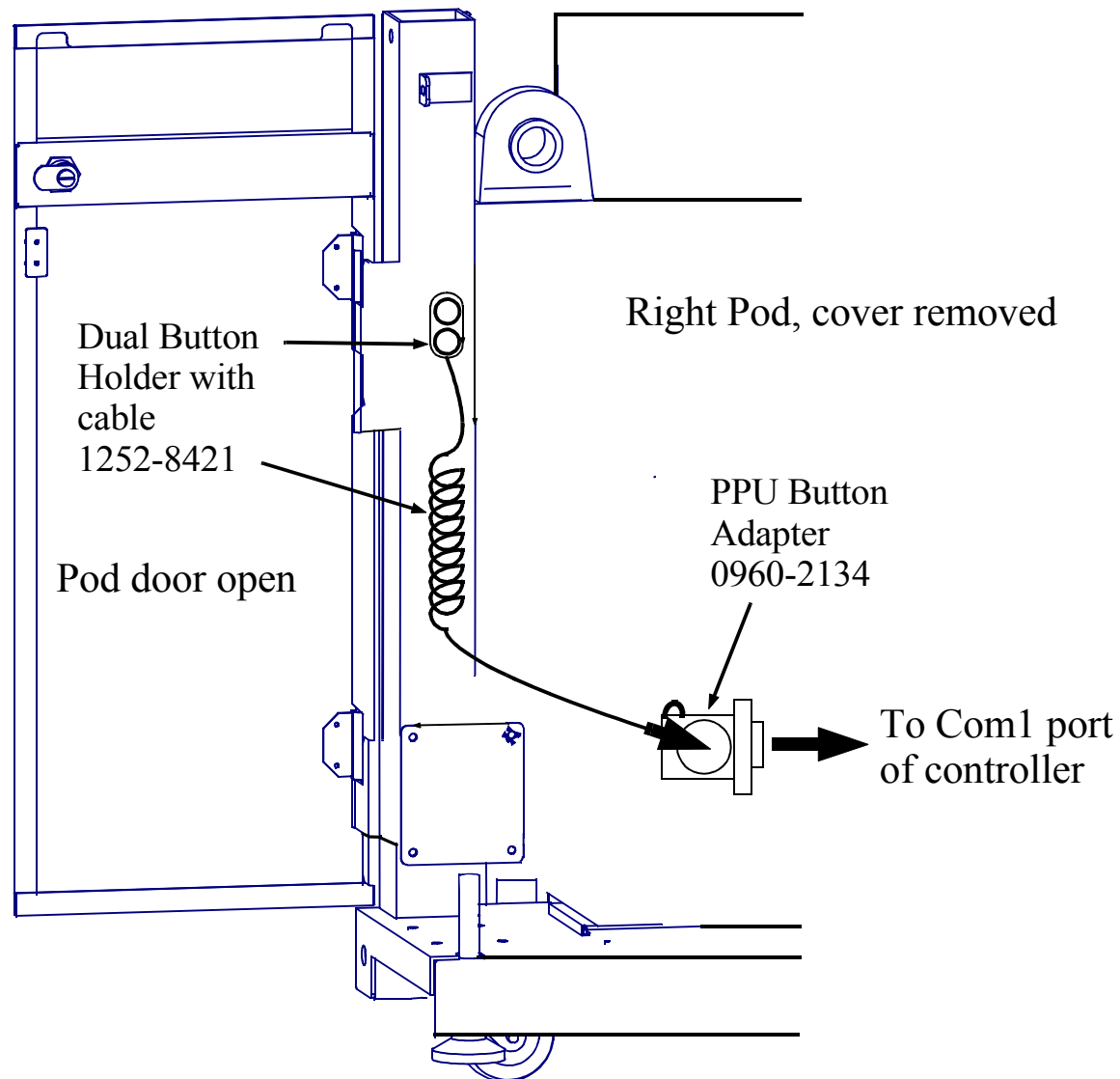
- [Install a Pay-Per-Use \(PPU\) Button Adapter, 1-27](#)
- [Setup the Testhead for Automation, 1-30](#)
- [Install AccessPlus Cables, 1-32](#)

Install a Pay-Per-Use (PPU) Button Adapter

If installing a PPU system, and the controller has been moved from its original location, reinstall the button hardware in the same pod as the controller:

- 1 Mount the Dual Button Holder (with cable) on the bottom hinge of the controller pod as shown in [Figure 1-10](#) on page 1-28.
- 2 Plug the Dual Button Holder cable into the PPU Button Adapter, and plug the adapter into the Com1 port on the controller.

Figure 1-10 Pay-Per-Use button adapter hardware in the pod



Installing and Removing Test Credit Buttons

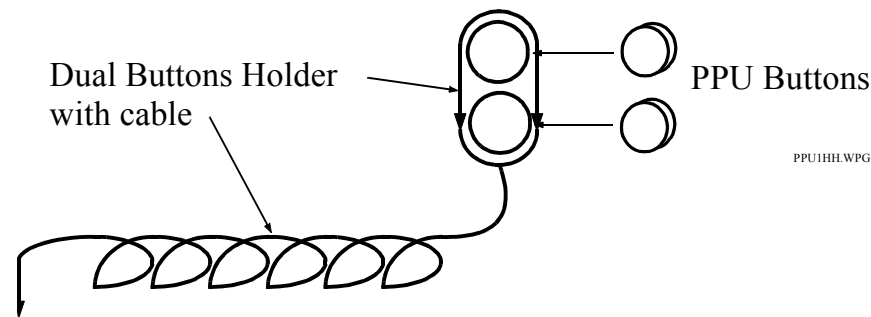
E3995A test credit button(s) are installed as shown in **Figure 1-11**. One 50k test credit button is included with the PPU system. It is packaged in a 3-inch by 1.5-inch box inside a plastic bag containing installation instructions.

Test credit buttons may be inserted while the system is running. To insert a button, grasp it with the flange or labeled side up. Push the button firmly into one of the

ports of the button holder. Save the packaging material until you are certain that the button is working correctly.

To remove a test credit button, grasp the button by its flange and pull it straight out of the button holder. To remove the button holder cable from the button adapter, deflect one of the retaining latches with your fingernail, a pen, or similar instrument. The button connector will pop up for removal.

Figure 1-11 Installing PPU buttons



Verifying the Test Credit Buttons

From a 3070service logon, run a report that tests the test credit buttons:

Click **Start > Programs > Agilent 3070 > PPU Report?**

A report similar to the one shown in **Figure 1-12** on page 1-30 will be displayed in a new window.

Verify that the button label and the button balance are correct for the number of buttons installed.¹ Buttons are identified by the button label number on the button.

¹ The E3994A 10k Test Credit Button may also be used and would indicate 10,000 credits.

Figure 1-12 PPU report

File Actions Update Report Help									
Credit Button and Board History Data valid as of: 10/19/94 - 11:36:59									
Credit Button Data					Test Time Remaining Per Credit Button Based On Selected Criteria				
Button Label		Button Balance		Hours	Minutes				
d4 b1 ea		9727							
5e 52 5b		50000							
Total:		59727							
Individual Board History									
Board ID	Start	Last	Level	Speed	Nodes	STC	POTS	Rate	Credits
test_board0	09/01/94	09/15/94	powered	6	900	N	0	4.00	293
test_board2	09/10/94	09/15/94	combinational	6	900	N	0	4.00	3
test_boardbar	09/11/94	09/15/94	in-circuit	12	1900	y	0	8.00	133
maxboardname123456	07/01/93	09/16/94	combinational	20	5200	Y	8	125.00	9999999
report_board1	07/01/93	09/15/94	in-circuit	6	1200	N	0	4.00	32
report_board2	09/01/94	09/11/94	powered	12	1600	N	0	6.00	5
report_board3	09/15/94	09/16/94	powered	12	1750	N	0	6.00	3

Setup the Testhead for Automation

If a piece of automation equipment is being installed on top of the testhead:

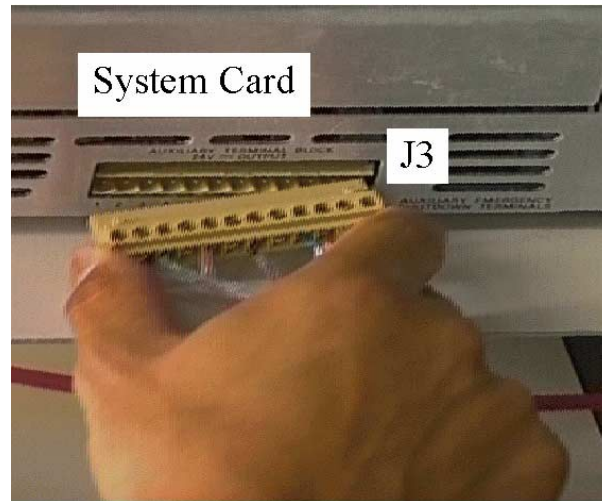
- 1 Shut down the testhead.
- 2 Rotate the testhead to the normal position, then install the shipping bolts to keep it from being rotated

(see [Figure 1-1](#) on page 1-11 for shipping bolt locations).

- 3 Screw the testhead leveling feet down to the floor to stabilize the testhead (see [Figure 1-6](#) on page 1-18). Also install floor brackets to keep the testhead stable. If you don't have a floor bracket kit, order Agilent 44990-63221. Installation instructions accompany the kit.

- 4 Use a 5-millimeter hex key wrench to remove the safety shroud from around the testhead's pin field.
- 5 After installing the automation equipment on the testhead, reach under the testhead and disconnect the plug from the Auxiliary connector (J3) on the System Card (**Figure 1-13**).

Figure 1-13 Connecting the EMO cable



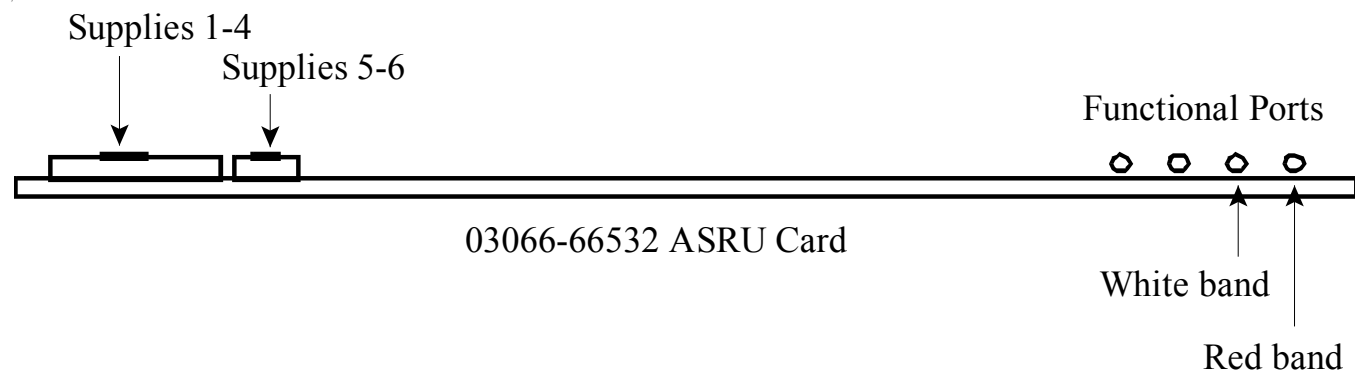
- 6 Remove the jumper from terminals 11 and 12 on the plug and connect the Emergency Shutdown (EMO) switch on the automation equipment to pins 11 and 12 on the plug. Then reinstall the plug on the System Card.

WARNING

 **DO NOT** operate the system without an EMO switch properly wired and accessible to the operator. Failure to provide EMO capability may result in death or serious bodily injury.

- 7 Boot the testhead. When the testhead is booted, press the EMO switch on the automation equipment to verify that it is functioning properly.

Figure 1-14 ASRU card connections (rear view)



Install AccessPlus Cables

Complete this section only if the system includes the AccessPlus option.

- Route the AccessPlus cables through the slots in the module doors, shown in [Figure 1-8](#) on page 1-25.

Enabling the Testhead

This section contains:

- [Boot the Testhead](#), 1-33
- [Troubleshooting Testhead Boot](#), 1-33
- [Check the System Config File](#), 1-34

Boot the Testhead

NOTE

The first time the testhead is booted, there will be several **Warning - Standard calibration tables not loaded for Module X Slot X** messages.

These warning messages are normal; they are generated because there are no valid AutoAdjust tables in the
\$AGILENT3070_ROOT/diagnostics/th1/cal_B
subdirectory.

These warning messages should not be seen after the AutoAdjust process is completed later.

- 1 Apply PDU power to the testhead:

Switch on the green rocker switch on the PDU.

- 2 Boot the controller (if not already booted), then log on as `service3070` (default password is `service`).

- 3 Start DGN if it does not start automatically:

- a Open a Korn shell window:

One way is to click **Start > Programs > Agilent 3070 > Korn Shell**.

- b At the **Korn Shell** window prompt enter:

`dgn`

- 4 In the DGN window, boot the testhead using the **Testhead Functns** and **Testhead Power On** function keys.

Troubleshooting Testhead Boot

If the testhead will not boot, watch the LEDs on the ControlXT/XTP Card for proper sequencing, and watch the monitor screen during the approximately two-minute power-up process for clues.

See [Table 1-4](#) on page 1-34 to identify the control card status LEDs in the following LED sequencing discussion.

Description of ControlXT/XTP LED Sequencing

- 1 After about 2 minutes LED activity will begin.

Table 1-4 ControlXT/XTP Card status LEDs (as viewed from the card edge)

LED Ref Des	6	7	4	5	2	3	0	1
Color R=Red G=Green	■	■	■	■	■	■	■	■
	R	G	R	G	R	G	R	G

- 2 Some various quick green-LED activity will be seen, then LED7 will flash for about 30 seconds.
- 3 More quick LED activity will occur including some red LEDs on for only about 2 seconds.
- 4 The sequence concludes successfully with green LEDs 5 and 7 continuously toggling opposite each other (heartbeat condition).

No red LEDs should remain on. If the testhead encounters boot errors, verify the `bootptab` file contains the unique hardware address of the control card. See the *Agilent 3070 / 79000 Repair Manual*.

Check the System Config File**NOTE**

Non-matching `config` files can result from the controller being shipped separate from the testhead, or if testhead cards have been moved.

NOTE

The **Actual Config** function key **F4** polls the cards in the testhead to identify their type.

- 1 Compare the system and standard `config` files to the configuration printouts shipped with the system:

Open a **Korn shell** window: Click **Start > Programs > Agilent 3070 > Korn Shell**.

- 2 At the prompt enter:

```
cd $AGILENT3070_ROOT/diagnostics/th1
then,
more config
```

NOTE

For more information about `$AGILENT3070_ROOT`, see “The Root Directory Environment Variable” in Chapter 2.

- 3 Do the two system `config` files match the system configuration printout that was shipped with the system?
 - If yes, continue to [Verifying the Testhead](#) on page 1-39.
 - If no, continue with [step 4](#).
- 4 Ask the customer's system administrator if there is a plan for configuring the card locations.
- 5 Edit the system `config` files to match the actual card locations. For more information, see “Editing Files” in Chapter 2.
- 6 Compile the configuration files. For more information, see “Compile the two Config Files” in Chapter 2. .

NOTE

If the config files will not compile correctly, check if the codewords are correct.

For more information, see “Verify Installed Codewords” in Chapter 2.

-
- 7 Close the **Korn Shell** window.

Verifying the Vacuum Subsystem

This section contains:

- [Introduction](#), 1-36
- [Install the Vacuum Manifold](#), 1-36
- [Connect the Compressed Air](#), 1-36
- [Check the Vacuum Actuation System](#), 1-36
- [Troubleshooting](#), 1-37

Introduction

The 327X (one-module) testhead has at least one internal vacuum solenoid. The second internal solenoid is optional.

It is the customer's responsibility to connect external vacuum solenoid control wires to the System Card if external solenoids are used.

See [Figure 1-15](#) on page 1-38 to reference internal vacuum solenoids in a 4-module testhead.

Install the Vacuum Manifold

- Install the vacuum manifold on the vacuum ports located toward the rear of the testhead,
- See [Figure 1-8](#) on page 1-25 for the vacuum port locations.

Connect the Compressed Air

- A male-quick-disconnect air fitting is installed on the rear of the testhead to connect to the compressed air supply,
- If the customer's compressed air hose has the opposite fitting to mate with the testhead fitting, install the included female quick-disconnect fitting.

Check the Vacuum Actuation System

NOTE

See “Vacuum Control Specifics” in Chapter 2 for more information.

- 1 If a vacuum source is connected and the solenoid(s) are wired, turn the vacuum on and off and listen for the sound of solenoids operating:

- a Install and lock-down a fixture.

- b Open a BT-BASIC window.

One way is to double-click the **BT-BASIC** desktop icon.

- c At the **BT-BASIC** window prompt, enter:

- 1) testhead is 1

- 2) vacuum well a is <m>

where <m> = a valid module vacuum port (where the vacuum manifold or external vacuum hoses are connected).

d At the prompt, alternately enter:

- `faon`
- `faoff`

Otherwise, use a voltmeter to verify that the 24-volt dc can be switched to all terminal pairs of the auxiliary connector (J3) on the System Card. See [Figure 1-15](#) on page 1-38 for the relay wiring block diagram.

NOTE

Early 317x and 3070 systems used external vacuum solenoids.

Troubleshooting

If the vacuum control will not work, check:

- If the vacuum source is turned on.
- If the compressed air supply is turned on.
- If the 24 VDC is present on the Auxiliary port when switched on.
- If the solenoid is operating correctly.
- How many solenoids are being used to control the vacuum?
- Which Auxiliary ports are being used to control which solenoids?
- If external solenoids are used, which solenoids have hoses to which vacuum ports?

- With the testhead powered-up, look at the system config file:

```
$AGILENT3070_ROOT/diagnostics/th1/config
```

NOTE

For more information about `$AGILENT3070_ROOT`, see “The Root Directory Environment Variable” in Chapter 2. .

NOTE

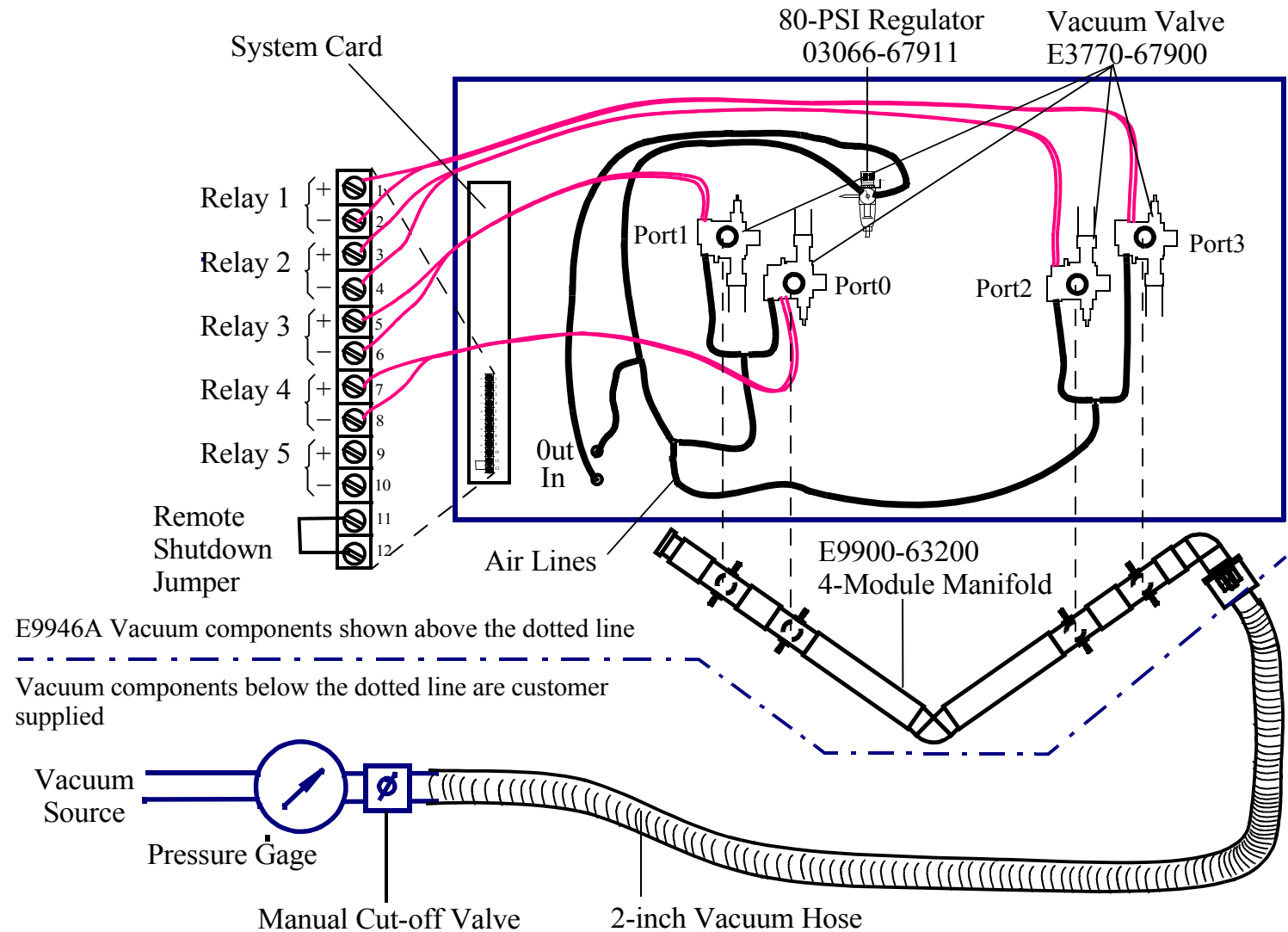
The vacuum well is normally defined in the testplan.

The vacuum outlets are where the vacuum connects to the test fixture on top of the testhead.

Agilent 317X and 327X testheads have two vacuum ports – for the 327X testhead, ports 2 and 3 are reversed from the orientation shown in [Figure 1-15](#) on page 1-38.

- Verify that the `relay <r> controls vacuum <m> statement(s) agree(s) with the hardware:`
- `r = 1` for Aux 1.
- `r = 2` for Aux 2.
- `r = 3` for Aux 3.
- `r = 4` for Aux 4.
- `r = 5` for Aux 5.
- `m = the module vacuum port(s) connected (can be 0; 1; 2; 3; 0,1; 2,3; 0-3).`

Figure 1-15 Internal vacuum solenoids in a four-module testhead



Verifying the Testhead

Run AutoAdjust All

CAUTION



Allow the testhead to warm up for 30 minutes before running **AutoAdjust All**.

If the testhead temperature is not allowed to stabilize, diagnostic and testing failures may appear later.

- 1 Verify a `service3070` logon.
- 2 Start Diagnostics if it does not start automatically:
 - a Click **Start > Programs > Agilent 3070 > Korn Shell**.
 - b At the **Korn Shell** window prompt, enter:
`dgn`
- 3 From the **Service Package - Level 1** menu, select **Config**.
- 4 Select **DGN Config**.
- 5 Press function key **F6** in the **AutoAdjust** menu to run **AutoAdjust All**.
- 6 Verify that there are no errors.

Run Full Diagnostics

NOTE

Compressed air must be attached to the system to run full Diagnostics.

- 1 Place a pin verification fixture on the testhead, then lock it down.
- 2 Change **Manual Intervention** to **Yes** (press **Next Value**).

NOTE

Do not press **Save Config** as that will make the **Manual Intervention** selection permanent.

- 3 Run **Full Diagnostics**.
- 4 Verify that there are no errors.
- 5 Logout of DGN.

Completing the Installation

Verify Strip Printer

- 1 Open a BT-BASIC window.
- 2 Enter: `printer is "/dev/com/2"`
- 3 Enter: `print "strip printer test"`
Do this a couple of times. The printer should print "strip printer test."
- 4 Enter: `printer is *`
- 5 Close the BT-BASIC window.

System Printer / Plotter

The customer's system administrator or LAN manager will provide the device's name, IP address, and driver.

Stabilize the Testhead

Stabilize the testhead to keep it from moving around on the floor:

- Use a hex-key wrench to screw the testhead's four leveling feet down to the floor.

See **Figure 1-6** on page 1-18 for the location of a leveling foot.

NOTE

It may be necessary to remove the pod cover to access the hex-slot of the leveling foot.

Reinstall Covers

If any pod or cradle covers are still off the system, reinstall them now.

Make System Recovery and Backup Tapes

A recovery tape allows you to boot the controller after a catastrophic fault, such as when you can no longer boot from disk.

To make a backup or recovery tape, see *Administering Agilent 3070 MS Windows Systems*.

CAUTION



Using system recovery tape will overwrite all existing data on system controller.

Turn System Administration Over to the Customer

Inform the customer of the appropriate logins and passwords for the system.

Fill Out the System Support Log

Introduce the customer to the *Agilent 3070 / 79000 System Support Log*, 03066-90150.

- 1 Place your business card in Chapter 1, and suggest that other Agilent representatives' cards belong there too.

- 2 Place the customer's Agilent 3070 software licenses in Chapter 2.
- 3 Fill out the Installation and Configuration Records to reflect the system.

Maintenance Records

If a problem was fixed that warrants a Maintenance Record, fill one out now.

About ScanWorks

If the testhead is equipped with ScanWorks boundary-scan, the system config file (\$AGILENT3070_ROOT/diagnostics/th1/config) and standard config file (\$AGILENT3070_ROOT/standard/config) must be edited to use the ScanWorks hardware. This is the customer's responsibility. See the *Syntax Reference* User's manual for information on the ports... statement. You should have code similar to this in your config files:

```
performance port
  port 2 100 pin bsi 1
end performance port
```

Installation Billing Information

Up to eight hours may be charged to Agilent's Electronics Manufacturing Test Division (EMTD/0900) for performing the scope of the system installation that includes:

- Initial site preparation – two hours.
- Verifying the site preparation – two hours.

- Installing the system and completing full Diagnostics – four hours.

Contact EMTD at 1.800.447.TEST to bill charges above and beyond this scope.

Do not include repair time on the installation repair order. Instead, complete a separate repair order for any warranty repair associated with the installation.

In Case of Difficulty

Shipping Damage or Incorrect Shipment

Contact your local Agilent Sales office.

Network, System Administration, or Test Server Help

- Review Chapter 2 in the *System Installation Manual (MS Windows Version)* for more information.
- See *Administering Agilent 3070 MS Windows Systems*. This manual is also available in electronic format as part of the User documentation shipped on the controller's hard drive.

Optional Agilent Performance Port Actuator Control System (ACS)

See *Agilent Performance Port* in the 3070 Service Documentation.

Vacuum Subsystem

See “Air Subsystems” troubleshooting in the online service documentation.

Additional Resources

If you need phone support, contact Agilent's Customer Support Center. Go to the Agilent Automated Test Equipment Contacts website and select your country:

www.agilent.com/see/contact_info

2

In this Chapter...

MS Windows System Installation Reference

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- [Installing Drivers and Configuring LAN Ports](#), 2-62

Referenced Manuals

The following manuals are referenced within this chapter:

- *Administering Agilent 3070 MS Windows Systems*,
- *Agilent 3070 / 79000 Family Site Preparation Manual* E9900-90045,
- *3070 / 79000 Family Board Test Systems Repair Manual*,
- *Agilent 3070 Family Users' Manual*.

Introduction

The information in this chapter may be helpful when installing an Agilent 3070 system that has a MS Windows controller.

Logging-On as service3070

The `service3070` logon allows system configuration and testing.

Display the Logon Status from a Current Login

- 1 Press the <Ctrl><Alt><Delete> keyboard keys at the same time.

Logon as `service3070` to Complete the Installation

If it should be necessary to change the logon:

- 1 Press together <CTRL> <Alt> <Delete>.
- 2 Click **Log Off**.

Wait for the log off, then follow the on-screen instructions to log back on.

- 3 Enter the logon information:
 - Logon Name = **service3070**
 - Default Password = **service**

The Root Directory Environment Variable

This section contains:

- [Introduction, 2-3](#)
- [Determine the Value of the Root Directory Environment Variable, 2-3](#)
- [Use of the Root Directory Environment Variable in a BT-BASIC Window, 2-4](#)
- [Use of the Root Directory Environment Variable in a Korn Shell Window, 2-5](#)
- [Use of the Root Directory Environment Variable in a DOS Command Prompt Window, 2-6](#)

Introduction

3070 systems now establish a root directory environment variable.

Beginning with software revision 3070 04.00pa, an environment variable is used to allow 3070 board files to be easily transferred between 3070 systems running either MS Windows or UNIX.

The environment variable is named `$AGILENT3070_ROOT`. It replaces the root directory path (upper path names) on both operating systems.

The directories, `/var/hp3070` and `/opt/hp3070`, are replaced by `$AGILENT3070_ROOT` on all MS Windows systems.

The root directory environment variable default is set to `C:/Agilent3070`.

Determine the Value of the Root Directory Environment Variable

- 1 Open a Korn shell window:
 - Double-click the desktop **Korn Shell** icon OR
 - Click **Start > Programs > Agilent 3070 > Korn Shell**.
- 2 At the prompt, enter:

```
echo $AGILENT3070_ROOT
```

The string returned is typically:

```
C:/Agilent3070
```

Use of the Root Directory Environment Variable in a BT-BASIC Window

Table 2-1 illustrates new path equivalents using the system config file in a **BT-BASIC** window.

NOTE

BT-BASIC usage is the same in both UNIX and MS Windows.

Table 2-1 Absolute & Environment Variable file path usage in BT-BASIC

Absolute Addressing at 3070 Software Release 3070 04.00pa	New Absolute addressing at 3070 Software Release 3070 05.00p or later	Environment Variable Addressing at 3070 Software Release 3070 04.00pa or later
msi "D:/Agilent3070/diagnostics/th1"	msi "C:/Agilent3070/diagnostics/th1"	msi btgetenv\$ ("AGILENT3070_ROOT") & "/diagnostics/th1"
get "D:/Agilent3070/diagnostics/th1/config"	get "C:/Agilent3070/diagnostics/th1/config"	get btgetenv\$ ("AGILENT3070_ROOT") & "/diagnostics/th1/config"

NOTE

At software revision 3070 05.00p, the Agilent3070 directory was moved from D:/Agilent3070/ to C:/Agilent3070/

btgetenv\$ ("AGILENT3070_ROOT") is only required for BT-BASIC commands which are referenced to the root.

If the BT-BASIC command `msi btgetenv$ ("AGILENT3070_ROOT") & <command>` is used prior to the next BT-BASIC command (for example `compile` or `faon`), use of the environment variable to define the root path is unnecessary. BT-BASIC commands which normally contain paths (`msi`, `load`, `copy`, `save`, `get`, `store`, `unlink`, `rcall`) for example, will require:

`btgetenv$ ("AGILENT3070_ROOT") & <rest of path>`

Use of the Root Directory Environment Variable in a Korn Shell Window

In a **Korn shell** window, follow the UNIX syntax:

- Use `$<variable>` (instead of `%<variable>%`).
- Use the correct case.
- Use `/` (forward slash) instead of `\` (backslash).

Table 2-2 illustrates new path usage when working in a **Korn shell** window.

Table 2-2 Absolute & Environment Variable file path usage in a **korn shell** window

Absolute Addressing at 3070 Software Release 3070 04.00pa	New Absolute addressing at 3070 Software Release 3070 05.00p or later	Environment Variable Addressing at 3070 Software Release 3070 04.00pa or later
D:/Agilent3070/diagnostics/th1	C:/Agilent3070/diagnostics/th1	\$AGILENT3070_ROOT/diagnostics/th1
/opt/hp3070/help/C/SERVICE	/opt/hp3070/help/C/SERVICE	\$AGILENT3070_ROOT/Documentation/SERVICE

Use of the Root Directory Environment Variable in a DOS Command Prompt Window

In a **MS-DOS Command Prompt** window:

- Use %<variable>% (instead of \$<variable>).
- Use \ (backslash) instead of / (forward slash).

Table 2-3 on page 2-6 illustrates new path usage using the `dev` directory as an example when working in a **MS-DOS Command Prompt** window.

Table 2-3 Absolute & Environment Variable file path usage at a **MS-DOS Command Prompt**

Absolute Addressing at 3070 Software Release 3070 04.00pa	New Absolute addressing at 3070 Software Release 3070 05.00p or later	Environment Variable Addressing at 3070 Software Release 3070 04.00pa or later
D:\Agilent3070\dev	C:\Agilent3070\dev	%AGILENT3070_ROOT%\dev

Directory Descriptions

Table 2-4 lists descriptions of some 3070 MS Windows system directories.

Table 2-4 Descriptions of various 3070 MS Windows system directories

\$AGILENT3070_ROOT/	The directory where the vast majority of the 3070 system software resides.
\$AGILENT3070_ROOT/autofile	The directory that contains all the autofiles for the system.
\$AGILENT3070_ROOT/bin	The directory that contains most of the executable programs for the system.
\$AGILENT3070_ROOT/boards	The directory that should contain customer board directories.
\$AGILENT3070_ROOT/contrib	The directory where user-contributed software that may be of use to 3070 customers is redistributed by Agilent.
\$AGILENT3070_ROOT/dev	A directory that contains pseudo device files for use by the 3070 software.
\$AGILENT3070_ROOT/diagnostics	A directory that contains testhead configuration and diagnostic information / programs.
\$AGILENT3070_ROOT/etc	A directory that contains miscellaneous files.
\$AGILENT3070_ROOT/help	A directory that contains help information.
\$AGILENT3070_ROOT/home	The directory that contains the MS Windows user's home directories.
\$AGILENT3070_ROOT/lib	The directory that contains digital libraries and other executables.
\$AGILENT3070_ROOT/library	The directory that contains device libraries provided for board development.
\$AGILENT3070_ROOT/qm	The directory to which statistics are logged.
\$AGILENT3070_ROOT/standard	A directory that contains templates used throughout the system.
\$AGILENT3070_ROOT/tmp	A directory that is used by the 3070 software for storing temporary files / logs.
\$AGILENT3070_ROOT/util	A directory that is used for storing a few utility files.

Editing Files

This section contains:

- [Front-Slashes versus Back-Slashes in Command Lines Containing File Paths, 2-8](#)
- [Use BT-BASIC, 2-8](#)
- [How to Edit the System Config File to Match the Testhead Configuration, 2-9](#)
- [How to Resolve the Standard Config File from the System Config File, 2-10](#)

Front-Slashes versus Back-Slashes in Command Lines Containing File Paths

A general rule for commands using a path to a directory or file is to use a forward-slash (/) for commands tied to a 3070 application, and use a back-slash (\) for operating system-related commands.

If a command line containing a file path fails to execute, it may be because the slash used is of the wrong type.

Reversing the slash(es) may resolve the issue.

This is because:

- Many Korn shell commands are used in the MS Windows environment, and require front-slashes (/) in command lines containing file paths.
- In MS Windows, when opening a file from the **Start > Run...** menu, both front-slashes (/) and back-slashes (\) are recognized.

- A command may be performed in or with some relationship to the MS-DOS environment, which can require back-slashes in command lines containing file paths.

Use BT-BASIC

BT-BASIC is the designated file-editing tool. Unless otherwise specified, editing described in this chapter is performed using **BT-BASIC**.

Korn shell, **vi**, and **viw** editors can also be used to edit files.

Reference information for all these tools:

- [BT-BASIC Quick Reference](#) on page 2-16.
- [Korn Shell Quick Reference](#) on page 2-17.
- [vi and vi Editor Quick Reference](#) on page 2-20.

NOTE

BT-BASIC cannot be accessed when logged in as administrator.

Open BT-BASIC

- Double-click the desktop **BT-BASIC** icon OR
Click **Start > Programs > Agilent 3070 > BT-BASIC**.
BT-BASIC will open with the cursor on the command line.

Open a File in BT-BASIC

- From the command line, enter:

```
get btgetenv$ ("AGILENT3070_ROOT") &  
"<path to the file>"
```

For more information about this command, see [Use of the Root Directory Environment Variable in a BT-BASIC Window](#) on page 2-4.

Edit in BT-BASIC

- Press **F1** on the keyboard, if necessary, to toggle to the workspace.

To move the cursor, use the keyboard arrow keys, and the **Insert Char**, and **Delete Char** keys.

Save in BT_BASIC

- Press **F1** on the keyboard, if necessary, to toggle to the command line.

- Enter:

```
re-save
```

Exit BT-BASIC

- Press **F1** on the keyboard, if necessary, to toggle to the command line.
- Enter:

```
exit
```

How to Edit the System Config File to Match the Testhead Configuration

If the testhead configuration has changed, the system config file MUST be updated to reflect the change.

[Table 2-5](#) on page 2-9 describes the process.

Table 2-5 Edit the system config file to match the testhead configuration

Task	Step
1 Open the system config file in a BT-BASIC window.	a Open a BT-BASIC window by double-clicking the desktop icon. b From the BT-BASIC command line, enter: <pre>get btgetenv\$ ("AGILENT3070_ROOT") & "/diagnostics/th1/config"</pre>
2 Arrange or modify statements to reflect the actual testhead configuration.	Do this as required. See Table 2-8 on page 2-16 for commonly used BT-BASIC commands.

Table 2-5 Edit the system config file to match the testhead configuration

Task	Step
3 Save and exit the system config file.	- Enter: - re-save - exit
4 Compile the system config file.	For instructions, see Compiling the System and Standard Config Files on page 2-35.

How to Resolve the Standard Config File from the System Config File

If the system config file has changed, it is good practice to edit the standard config file to reflect the changes as a service to the board test development personnel.

See [Table 2-6](#) to resolve the standard config file from the system config file.

[Figure 2-1](#) on page 2-14 illustrates the concept.

The desired end result is to copy the `cards ...`, `serial ports ...`, `supplies ...` and `ports ...` statements from the system config file to the standard config file.

No changes to the system config file are made.

Table 2-6 Resolve the standard config file from the system config file

Task	Step
1 Make a backup copy of the standard config file:	a Open a BT-BASIC window by double-clicking the desktop icon. b At the prompt, enter: <pre>msi btgetenv\$ ("AGILENT3070_ROOT") & "/standard"</pre> c copy config over config.temp
2 Open the standard config file:	a Enter: <pre>get btgetenv\$ ("AGILENT3070_ROOT") & "/standard/config"</pre>

Table 2-6 Resolve the standard config file from the system config file (continued)

Task	Step
3 Open the system config file in a new BT-BASIC window:	At the new BT-BASIC window command line, enter: <pre>get btgetenv\$ ("AGILENT3070_ROOT") & "/diagnostics/th1/config"</pre>
4 Arrange the two BT-BASIC windows so that each can be readily accessed.	
5 Copy the appropriate statements from the system config file to the clipboard buffer:	In the BT-BASIC window containing the system config file: - Press F1 on the keyboard to enter the workspace. - Locate the <code>module <number></code> that contains un-commented <code>cards 1 ...</code> statements using the arrow keys or the Prev and Next keys. - Scroll the text up until the <code>end module</code> statement is visible. - Click and drag with the mouse to highlight the text including the <code>ports ...</code> statement The highlighted text is now copied in the clipboard buffer.
NOTE Do not include <code>probe</code>, <code>debug port</code>, <code>bank</code>, or <code>end bank</code> statements. These statements are not valid in the standard config file.	

Table 2-6 Resolve the standard config file from the system config file (continued)

Task	Step
6 Paste the copied text in the standard config file:	CAUTION  Do not delete the ! Specify instrument ... through ! connect ... statements.
	a Activate the window containing the standard config file by clicking on the window border. b Press F1 on the keyboard to enter the workspace. c Move the cursor immediately below the <code>module <number></code> statement that corresponds to the <code>module <number></code> statement copied in the previous task. ■ Take care not to overwrite other lines. d Click the right mouse button. The text from the buffer will be inserted into the standard config file.
7 Verify that each un-commented <code>module <number></code> and <code>end module</code> statement in the system config file is un-commented in the standard config file.	
8 Save , then exit the standard config file:	a In the window containing the standard config file, press F1 to return to the command line. b Enter: 1) <code>re-save</code> 2) <code>exit</code>

Table 2-6 Resolve the standard config file from the system config file (continued)

Task	Step
9 Exit the system config file without saving it:	a In the window containing the system config file, press F1 to return to the command line.
	b Enter: exit
10 Compile the standard config file.	Instructions are given in Compiling the System and Standard Config Files on page 2-35.

Figure 2-1 Copying configuration information

\$AGILENT3070_ROOT/standard/config

BT-BASIC			
<u>Status:</u> xxx lines in workspace			
		configuration xxxx	
! CONFIGURATION FOR DEVELOPING BOARD TESTS			
target . . .			
enable . . .			
module . .			
! Specify instrument			
end module			
command			

BT-BASIC			
<u>Status:</u> xxx lines in workspace			
		configuration xxxx	
! relay 1 controls vacuum . . .			
bank . .			
module . .			
cards 1 . . .			
.			
.			
ports . . ., . . .			
end module			
module . .			
cards 1 asru . . .			
.			
ports . . ., . . .			
command			BASIC

\$AGILENT3070_ROOT/diagnostics/th1/config

MS Windows Quick Reference

See [Table 2-7](#) for a MS Windows quick-reference.

Table 2-7 MS Windows quick-reference

To Do This...	Enter This...
• Kill processes and applications • Monitor CPU and memory usage	Open the MS Windows Task Manager: a Hold down the <Ctrl><Alt><Delete> keys at the same time (or right-click on the toolbar). b Click Task Manager...
• View error logs • Perform diagnostics • Use other various administrative tools	Open the MS Windows Event Viewer: a Click Start > Settings > Control Panel. b Double-click Administrative Tools, then select the appropriate application.

BT-BASIC Quick Reference

Table 2-8 lists some commonly used BT-BASIC statements.

Additional BT-BASIC information is given in **Editing Files** on page 2-8.

NOTE

If uncertain whether to use front-slashes or back-slashes, see **Front-Slashes versus Back-Slashes in Command Lines Containing File Paths** on page 2-8.

Table 2-8 Commonly used BT-BASIC statements

BT-BASIC Statement	Statement Function
<code>msi btgetenv\$ ("AGILENT3070_ROOT") & "<path to the file>"</code>	Change to file location
<code>get btgetenv\$ ("AGILENT3070_ROOT") & "<path to the file>"</code>	Retrieve an existing file
<code>save "<filename>"</code>	Create a new file
<code>re-save</code>	Save an existing file
<code>compile "<filename>"</code>	Compile a file
<code>compile "<filename>";testhead</code>	Compile a testhead file
<code>findn "<string expression>"</code>	Find the next occurrence of a string expression
<code>exit</code>	Quit BT-BASIC

Korn Shell Quick Reference

Although the operating system is MS Windows, a number of 3070 UNIX commands are valid in the Korn shell.

See [Table 2-9](#) for a Korn shell quick reference. Keyboard keys are in { }.

For complete information about a command, at a Korn shell window prompt, enter:

```
man <command_name>
```

Table 2-9 Korn shell quick reference

Working with Directories	
To Do This...	Enter This...
Show current working directory	<code>pwd</code>
Change directory	<code>cd <pathname></code>
Change to home directory	<code>cd</code>
Create a directory	<code>mkdir <directoryname></code>
Remove an (empty) directory	<code>rmdir <directoryname></code>
Display permissions for a directory	<code>ls -ld <directoryname></code>
Working with Files	
To Do This...	Enter This...
List files and directories in current directory	<code>ls</code>
List all files or directories, including hidden ("dot") files	<code>ls -a</code>
List files, and show directories with / and executables with *	<code>ls -f</code>

NOTE

If uncertain whether to use front-slashes or back-slashes, see [Front-Slashes versus Back-Slashes in Command Lines Containing File Paths](#) on page 2-8.

Table 2-9 Korn shell quick reference (continued)

Display permissions for a file	<code>ls -l <filename></code>
Create or edit a file	<code>vi <filename> or viw <filename></code>
Display file contents	<code>more <filename> (q to quit) (v to vi)</code>
Copy a file with permissions and owners	<code>cp -p <file1> <file2></code>
Move a file to a new filename	<code>mv <old_file> <new_file></code>
Append file1 onto the end of file2	<code>cat <file1> >> <file2></code>
Remove a file	<code>rm <filename></code>
Finding and Organizing	
To Do This...	Enter This...
Find file(s) beginning with x in the current and sub-directories	<code>find . -name 'x*' -print</code>
Find all occurrences of word in all files in the current directory	<code>grep word *</code>
Display date and time	<code>date</code>
Display manual page for <command name>	<code>man <commandname></code>
Find name of current host system	<code>hostname</code>
Find current system information	<code>uname -a</code>
Find environment information, including PATH	<code>env</code>
System Operations	
To Do This...	Enter This...
Clear screen	<code>clear</code>
Exit / close Korn shell window	<code>exit</code>

Table 2-9 Korn shell quick reference (continued)

Set Korn shell for vi	<code>set -o vi</code>
Edit the command line (in Korn shell set for vi)	<code>{ESC}</code> (use vi commands)
Recall previous command line (in Korn shell set for vi)	<code>{ESC}k</code> (back) or <code>j</code> (forward)
Execute previous command line (in Korn shell set for vi)	<code>{Return}</code> (when line is displayed)
List current process status and PID's	<code>ps -ef</code>
Redirect input from a file to a command	<code>command < infile</code>
Connect two processes with a "pipe"	<code>command1 command2</code>
Network Operations	
To Do This...	Enter This...
Invoke FTP and connect to remote host	<code>ftp <remote_hostname></code>
Set transfer mode to ASCII	<code>ascii</code>
Set transfer mode to binary	<code>bin</code>
Copy a file using ftp from remote_hostname	<code>get <remote_file></code>
Copy a file using ftp from the local current directory to current directory on the remote_hostname	<code>put <local_file></code>
Exit FTP	<code>bye</code>

vi and vi Editor Quick Reference

See [Table 2-10](#) for a vi and viw editor quick reference.

Keyboard keys are in { }.

NOTE

If uncertain whether to use front-slashes or back-slashes, see [Front-Slashes versus Back-Slashes in Command Lines Containing File Paths](#) on page 2-8.

Table 2-10 vi and viw editor quick reference

Getting Started with vi	
To Do This...	Enter This in Command Mode...
Create or edit a file in a Korn shell window	vi <filename>
Create or edit a file in a vi window	viw <filename>
Make sure you're in command mode	{ESC}
Show if you are in command or insert mode	:set showmode
Find out what file you are in	{CTRL}g
Moving Within a File	
To Do This...	Enter This in Command Mode...
Move the cursor left or right	h or l or arrow keys
Move the cursor up or down	k or j or arrow keys
Cursor to end of line	\$
Cursor to beginning of line	0 (Zero) or ^
Cursor to end of file	G

Table 2-10 vi and viw editor quick reference (continued)

Cursor to line <n>	<n>G
Inserting Text	
To Do This...	Enter This in Command Mode...
Insert text at the cursor position	i
Insert a new line after the current line	O (capital)
Insert (Append) text after the cursor position	a
Backspace to overwrite previous character (in Insert Mode)	{CTRL}h or {Backspace}
Replace single character	r <character>
Replace until {ESC} is pressed	R
Deleting Text	
To Do This...	Enter This in Command Mode...
Delete characters at cursor	x
Delete word (cursor at beginning of word)	dw
Delete the entire line at the cursor position	dd
Delete from cursor to end of the current line	D
Delete from cursor to end of the file	dG
Moving Text	
To Do This...	Enter This in Command Mode...
Join lines of text	J

Table 2-10 vi and viw editor quick reference (continued)

Copy a line into a buffer	yy
Put copied or deleted text line from buffer after cursor line	p
Read in another file after cursor line	:r <filename>
Searching Text	
To Do This...	Enter This in Command Mode...
Search forward for <words>	/<words>
Search backward for <words>	?<words>
Repeat the previous search for words	n (next) or N (previous)
Saving and Printing Files	
To Do This...	Enter This in Command Mode...
Save file in same filename	:w
Save file to a new filename	:w <new_filename>
Exit from file without saving changes	:q!
Overwrite another existing file with this file	:w! Or wq!
Save and exit from the vi editor	:wq
Repairing Mistakes	
To Do This...	Enter This in Command Mode...
Undo the previous action	u
Restore a line to its previous state	U
Restore ("put") last delete	p

Table 2-10 vi and viw editor quick reference (continued)

Restore current file to last saved text and disregard changes	:e!
Undo last edit	u (repeat to toggle)
Recover a file after a system interruption (from the Korn shell)	vi -r <filename>

Codewords & Software License Keys

This section contains:

- [Introduction](#), 2-24
- [Installing Codewords & Software License Keys](#), 2-24
- [Verify Installed Codewords](#), 2-24
- [Compile the Two Config Files](#), 2-24

Introduction

Codewords & software license keys are pre-installed at the factory and normally do not require adjustment.

The capabilities of a 3070 system are based on the codewords and software licenses installed.

Codeword & software licenses are used by the system config file compiler and allows confirmation that the hardware and the supported software features are compatible.

NOTE

Agilent will issue software license keys to replace the current codeword scheme for new 3070 features starting with software release 05.20p. At present, only new features will require the license key.

Installing Codewords & Software License Keys

Instructions for installing codewords are included with the software license(s) and Entitlement Certificate(s).

Verify Installed Codewords

To verify the codewords & software license keys:

- a Click **Start > Programs > Command Prompt**.
- b At a command window prompt, enter:
`codeword -1 (el, not one)`
- c If errors are returned, the board config will not compile properly.

Compile the Two Config Files

CAUTION



If the codewords have changed in any way, it will be necessary to compile both the system and standard config files. Instructions are given in [Compiling the System and Standard Config Files](#) on page 2-35.

CAUTION



Incorrectly entered codewords, blank lines or spaces before or after a codeword may cause errors when compiling the config files. User and Operator logins may not boot if the \$AGILENT3070_ROOT/lib/.enable file contains invalid information. Codeword order does not matter.

System Config File Specifics

This section contains:

- [Introduction, 2-26](#)
- [Location of the System Config File, 2-26](#)
- [Edit the System Config File, 2-26](#)
- [The "Official" and "Actual" System Config Files, 2-26](#)
- [To Repair a Corrupt System Config File, 2-26](#)
- [Descriptions of Some Statements in the System Config File, 2-27](#)

Introduction

The system config file must match the testhead card configuration.

Edit the system config file if either the testhead cards or locations of the testhead cards have changed.

Location of the System Config File

The path to the system config file is:

```
$AGILENT3070_ROOT/diagnostics/th1/config
```

Edit the System Config File

- 1 Login as `service3070` (default password is `service`).

- 2 At a **BT-BASIC** window prompt, enter:

```
msi btgetenv$ ("AGILENT3070_ROOT") &  
"/diagnostics/th1"
```

- 3 Enter:

```
get "config"
```

- 4 Edit the file to match the actual testhead card configuration.

- 5 Enter:

```
re-save
```

- 6 Compile the changed system config file. See [Compiling the System and Standard Config Files](#) on page 2-35

The "Official" and "Actual" System Config Files

The "official" system config file is the system config file as when the system was shipped.

It is contained on a printout shipped with the system, and can be used as a model if it should be necessary to customize the system config file.

The "actual" system config file is the system config file in use which reflects the actual cards and card locations in the testhead.

To Repair a Corrupt System Config File

One of the `sys.config.xxx` templates can be copied from the `$AGILENT3070_ROOT/diagnostics` directory and edited to match the actual system configuration.

NOTE

Changes to the system config file should be reflected in the standard config file. See [Standard Config File Specifics](#) on page 2-29.

Descriptions of Some Statements in the System Config File

The `testhead name` Statement

The `testhead name` statement in the system config file identifies the block in the `bootptab` file that contains hardware and IP addresses for the System Card and ControlXT/XTP Cards.

The `testhead name` statement in the system config file includes only the modules that are present; for a four-module system it looks like:

```
testhead name testhead1 module3 module2
module1 module0
```

The System Card is represented by `testhead1`

The ControlXT/XTP Card in each module is represented by `module<n>`

Modules are mapped in the `hosts` file. Using this information, specific hardware addresses can be determined in the `bootptab` file.

The `line frequency` Statement

In this statement, the unused frequency is commented. For example, if the system power is connected to 60 hertz, 50 is commented.

NOTE

"Commented" means that the comment character, an exclamation mark (!), has been placed at the beginning of a line.

The `relay` Statement

See [Vacuum Control](#) on page 2-41.

The `cards <keywords>` Statements

These statements identify to the system which cards are installed and where they are installed.

See [Table 2-15](#) on page 2-43 for available 3070 testhead cards with diagnostics names, `cards <keywords>` statements, pattern applications rates and part numbers.

The `cards <keywords>` statements can be delimited by commas (,); a range can be separated by the word "to."

Valid examples are:

- `cards 2, 3, 4, 5 hybrid standard double density`
- `cards 2 to 5 hybrid standard double density`
- `cards 2, 4, 7 to 11 hybrid standard double density`

The `supplies` <keywords> Statements

Numbering of the supplies in the `supplies` <keywords> statements is arbitrary.

The software will accept any mapping of supply numbers to modules.

If the customer plans to share board test fixtures with other systems, it is possible they may have modified the default power supply setting.

If so, reconcile the supplies numbering with existing systems.

Standard Config File Specifics

This section contains:

- [Introduction, 2-29](#)
- [The Board Config File, 2-29](#)
- [Standard Config File Syntax Similarities to and Differences from the System Config File, 2-29](#)
- [Statements Allowed in the Standard, System, and Board Config Files, 2-30](#)
- [Statements Allowed in the System Config File, 2-30](#)
- [Descriptions of Some Statements in the Standard Config File, 2-30](#)

Introduction

The standard config file should reflect all testhead resources available to the board test developer.

As shipped, the standard config file:

- Has the correct `target <keywords>` statement.
- Includes commented `enable <keywords>` statements for optional components.

Location of the Standard Config File

The path to the standard config file is:

```
$AGILENT3070_ROOT/standard/config
```

The Board Config File

The board test developer can use the standard config file as a template when developing a board config file.

The board config file is located in each board's subdirectory, and is a copy or subset of the standard config file.

The board config file can describe the resources in any one system or system subset.

Standard Config File Syntax Similarities to and Differences from the System Config File

The `cards <keywords>` syntax is the same for the system config file and the standard config file.

However, some of the syntax for the standard config file is different from that of the system config file.

Statements Allowed in the Standard, System, and Board Config Files

- target
- enable
- module
- end module
- access ports
- boards wired in parallel
- cards
- supplies
- ports
- boards
- connect

NOTE

connect statements allow programmers to name and define the use of external ports.

Usually these can remain as-shipped until the customer decides how to use these ports.

Statements Allowed in the System Config File

- testhead name
- line frequency
- board handler
- relay <x> controls vacuum <y>
- bank
- end bank
- probe
- debug port

NOTE

These statements are not allowed in either the Standard or Board Config Files, but are allowed in the System Config File.

Descriptions of Some Statements in the Standard Config File

The target <keywords> Statements

A target <keywords> statement is needed in each board config file.

See [Table 2-11](#) for factory default target <keywords> statements.

NOTE

The target <keywords> statement should be the first un-commented statement in the file and must exist before the cards <keywords> statements.

Table 2-11 Factory default `target <keywords>` statements

Pattern Application Rate (MP/s (mega patterns-per-second))	target <keyword> Statement
2	target Agilent3070 value
6	target hp3073 standard
12	target hp3070 advanced
20	target high accuracy

See [Table 2-12](#) for 3X72 process test system default `target <keywords>` statements.

Table 2-12 3X72 process test system default `target <keywords>` statements

Product Description	target <keyword> Statement
Agilent 3172-U Unpowered Test (up to 2modules)	target unpowered
Agilent 3072-U Unpowered Test (up to 4 modules)	target unpowered
Agilent 3172-P Powered Test (up to 2 modules)	target unpowered enable power testing
Agilent 3072-P Powered Test (up to 4 modules)	target unpowered enable power testing
Agilent 3X72 Test Development System Software and Licenses	target unpowered

The enable <keywords> Statements

These statements are used in combination with codewords to selectively enable software features.

CAUTION

 enable <keywords> statements should exist after the target <keywords> statements, and must be outside of a module block.

The programmer will un-comment the correct enable <keywords> statements which correspond to standard

or optional software features as the board config file is developed.

NOTE

Codewords must be installed to enable optional software features. For more information, see [Codewords & Software License Keys](#) on page 2-24.

Table 2-13 contains some enable <keywords> statements in the standard config file.

Table 2-13 Some enable <keywords> statements in the standard config file

enable <keywords>	Functional Description:
advanced boundary scan	Enables you to test chains of boundary scan parts, such as testing the interconnections without nailed access.
all high accuracy resources	For double density, high accuracy HybridPlus Cards, this option enables channel resources to be routed to pins that would otherwise be used for extended grounding on XG-50 fixtures. Because the resource assignments change, this option cannot be used with XG-50 fixtures.
combo test	Enables both in-circuit and functional test.
common delimiter	Enables interoperability between UNIX and MS Windows
connect check	Enables Agilent Connect Check.
dual well shared wiring	Enables dual-well shared wiring.

Table 2-13 Some `enable <keywords>` statements in the standard config file

<code>enable <keywords></code>	Functional Description:
<code>drivethru</code>	Enables the testing of digital devices through series resistors using Agilent TestJet technology. You can use the Agilent Drive Thru Test in combination with the Agilent Access Consultant to identify and selectively remove nonessential probing locations.
<code>express fixturing</code>	Allows Agilent SimPlate Express or cassette fixtures for your board test. If this option is not enabled, only an Agilent SimPlate Fixture can be used.
<code>flash70</code>	Enables flash memory programming mode.
<code>flash isp</code>	Enables flash isp software, which supports new data formats. Only supported with ControlXTP cards.
<code>incircuit test</code>	Enables automatic in-circuit test generation for systems which do not have it.
<code>magic</code>	Enables Agilent MagicTest circuit analysis mode.
<code>multiple board versions</code>	Enables Agilent Multiple Board Versions.
<code>paneltest</code>	Enables software that helps you develop tests for multiple-board panels on one fixture.
<code>pld isp</code>	Enables native PLD programming on the 3070 and supports CPLD programming with STAPL, SVF, Jam and JBC file types. Only supported with ControlXTP cards.
<code>polarity check</code>	Enables Agilent Polarity Check testing.
<code>powered testing</code>	Allows limited powered testing on an Agilent 3072 system (a maximum of two HybridPlus Cards, one HybridPlus and one ChannelPlus Card, or one HybridPlus and one AccessPlus Card per module).
<code>silicon nails</code>	Enables automatic generation of silicon nails ITL test files derived from library tests and customized to the board topology on user selected devices.

Table 2-13 Some `enable <keywords>` statements in the standard config file

enable <keywords>	Functional Description:
<code>testjet</code>	Enables the TestJet testing technique on your board. This option is automatically enabled on the Agilent 3072 system.
<code>throughput multiplier</code>	Allows testing up to four boards simultaneously (one per module), which increases board throughput. It can only be used with the <code>paneltest</code> option.

Compiling the System and Standard Config Files

For changes to the system config file and the standard config file to be enabled, they must be compiled.

NOTE

If codewords have been modified in any way, both the system and standard config files must be compiled.

To compile the config files:

- 1 Login as `service3070` (default password is `service`)
- 2 Open **BT-BASIC**.
- 3 Compile the system config file. At the command line, enter:
 - a `msi btgetenv$ ("AGILENT3070_ROOT") & "/diagnostics/th1"`
 - b `compile "config"; testhead`
- 4 Compile the standard config file. At the command line, enter:
 - a `msi btgetenv$ ("AGILENT3070_ROOT") & "/standard"`
 - b `compile "config"`
- 5 When the config files have compiled without errors, exit BT-BASIC.

The bootptab File

This section contains:

- **Hardware Addresses**, 2-36
- **IP Addresses**, 2-37

Hardware Addresses

Each System Card and Control Card has a unique hardware address (HA).

When changing a System Card, remove the ROM(s) from the pre-existing card and install it on the new card.

When changing a Control Card, update the `bootptab` file to reflect the unique HA of the new card.

CAUTION



Changes made to the `bootptab` file **MUST** be done through the **Bootp Server** program.

NOTE

The environment variable `$SystemRoot` is usually set to `c:\winnt\system32`

Given below is a method to edit the `bootptab` file:

- 1 Login as `service3070` (password is `service`).

- 2 Make a backup copy. One example:

- a Open **Windows Explorer**:

- For Windows NT, click **Start > Programs > Windows NT Explorer**.
- For Windows 2000, click **Start > Programs > Accessories > Windows Explorer**.

- b Navigate to:

`C:\WINNT\system32\drivers\etc`

- c Right-click on the `bootptab` file then select **copy**.

- d Navigate to:

`C:\Temp`

- e Right-click and select **paste**.

An unchanged copy is now in `C:\Temp`

- 3 Open **Bootp Server**:

- a Click **Start > Settings > Control Panel**.

- b Double-click **BOOTP Server**.

- 4 In the **BOOTP Server properties** window, click the **Clients** tab.

- 5 If a ControlXT/XTP Card was removed, delete its hardware address:

- a Pull down the **Hardware Address** menu and select the address of the card removed.
 - b Click **Delete**.

- 6 Add the HA of the ControlXT/XTP Card you are installing:
 - a Click **New**.
 - b Enter the ControlXT/XTP Card HA. The complete HA is typically 0060B0B2xxxx (xxxx = the number on the card).
- 7 Configure the card's IP address:
 - a In the **Available options** menu, select the following three options one at a time and click **>>** to move them to the **Configured options** menu:
 - **IP address >>**
 - **Merit dump file >>**
 - **Subnet mask >>**
 - b In the **Configured options** menu, select each option and click **Edit**.
Enter:
 - **IP Address** = 10.3.112.4 for module 0
10.3.112.5 for module 1
10.3.112.6 for module 2
10.3.112.7 for module 3
 - **Merit dump file** = This is a comment; enter the module number (e.g., module 2).
 - **Subnet mask** = 255.255.255.0
- 8 In the **BOOTP Server properties** window, click **Close**.

- 9 Restart the BOOTP Server:
 - a From **Control Panel** click **Services**.
 - b Double-click **Weird Solutions BOOTP Server**.
 - c Click **Stop** > **Yes** (wait) > **Start** (wait).
- 10 Close the **Services** and **Control Panel** windows.

This completes the procedure.

IP Addresses

The `bootptab` file, in conjunction with the hosts file, manages IP addresses for the modules in the testhead.

See [The hosts File](#) on page 2-38 to view IP addresses for the testhead modules.

The hosts File

The path to the `hosts` file is:

- `$SystemRoot/system32/drivers/etc/hosts`

NOTE

`$SystemRoot` is an environment variable that is usually set to: `c:/winnt`

The `hosts` file must include these IP addresses:

`10.3.112.2 testhead1 (System Card)`

`10.3.112.7 module3`

`10.3.112.6 module2`

`10.3.112.5 module1`

`10.3.112.4 module0`

Example 2-1 on page 2-39 shows a sample `hosts` file.

Test Device Communication

To verify connection to each of the devices listed in the `hosts` file:

- 1 Boot the testhead.
- 2 From a DOS window prompt, enter:

`ping <system name> OR`

`ping <IP address>`

Example 2-1 A sample `hosts` file

```
#
# This is a sample HOSTS file used by Microsoft TCP/IP for MS Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#       102.54.94.97      rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host

127.0.0.1      localhost
# 10.3.112.1    UNIX Controller uses this
# 10.3.112.10  MS Windows Controller uses this
10.3.112.2     testhead1
10.3.112.3     hpibgw
10.3.112.4     module0
10.3.112.5     module1
10.3.112.6     module2
10.3.112.7     module3
```

Device Files

This section contains:

- [Introduction](#), 2-40
- [Location of Device Files](#), 2-40
- [If a DUT Power Supply is Replaced](#), 2-40
- [DUT Power Supply Device Files](#), 2-40

Introduction

Management of devices on MS Windows controllers are very different than on UNIX controllers.

On MS Windows controllers, most devices are managed invisibly by the operating system. A small number of devices (primarily GPIB) are mirrored in the \$AGILENT3070_ROOT/dev directory so that the 3070 software will execute properly.

Location of Device Files

Device files can be found in the directory:

```
$AGILENT3070_ROOT/dev
```

and are shown in [Table 2-14](#).

Table 2-14

Device Files in \$AGILENT3070_ROOT/dev		
gpio1	hpib1	dmm
null	scope	dmm_ref
ps0. . . ps11	hp3488	synth

If a DUT Power Supply is Replaced

Change the appropriate ps<x> file if the GPIB address of any power supply changes.

[Example 2-2](#) shows the contents of the default ps0 file. In the line:

```
7,22
```

22 represents the GPIB address.

Example 2-2 Contents of the default ps0 file

```
!!!! 26 0 1 664499475 0000
hpib
7,22
```

DUT Power Supply Device Files

See [Table 2-18](#) on page 2-47 for DUT power supply GPIB addresses and device files.

Vacuum Control

Location of Vacuum Control Statements

These are contained in the system config file:

```
$AGILENT3070_ROOT/diagnostics/th1/config
```

Vacuum Control Specifics

The `relay <x> controls vacuum <y>` statements need to match the actual hardware configuration after the customer decides how to implement vacuum control.

For testheads without internal vacuum valves, the default statements are:

```
relay 1 controls vacuum 2,3
```

```
relay 2 controls vacuum 0,1
```

For testheads with the Agilent E9945A two-module internal vacuum system, the default statements are:

```
relay 1 controls vacuum 3
```

```
relay 2 controls vacuum 2
```

For testheads with the Agilent E9946A four-module internal vacuum system, the default statements are:

```
relay 1 controls vacuum 3
```

```
relay 2 controls vacuum 2
```

```
relay 3 controls vacuum 1
```

```
relay 4 controls vacuum 0
```

There is nothing special about the defaults except that each matches a configuration shown in the site preparation manual.

See the *Agilent 3070 / 79000 Family Site Preparation Manual* 03066-90114 for a drawing of this default vacuum hookup.

Modify the relay statements so that they will work the hardware.

For example, to turn on all four vacuum ports with a single relay, the following statement might be used in the system config file:

```
relay 1 controls vacuum 0,1,2,3
```

Rotating the Testhead

CAUTION



Remove all objects, including the monitor / keyboard support arms, from the rotational path of the testhead.

If the testhead would hit anything, damage could result.

CAUTION



Remove the shipping bolts before attempting to rotate the testhead. Otherwise, damage can result.

- 1 Open the pod door.
- 2 Press and hold the testhead rotation switch inside the pod until the testhead rotates to the desired position.

There is also sometimes a testhead rotation switch on the rear of the pod.

NOTE

The PDU must be turned on for the testhead rotation switch to be active.

Testhead Cards

Table 2-15 shows available testhead cards with their diagnostics names, cards <keywords> statements, pattern applications rates and part numbers.

If Changing a ControlXT/XTP or System Card

See [Private LAN and Serial Port MUX](#) on page 2-59.

Table 2-15 MS Windows supported cards with DGN names, cards <keywords> statements, pattern application rates and part numbers

Card Type	DGN Config Name	cards <keywords> Statement in the System Config File	Pattern Application Rate (MP/s)	Card P/N
Access	Access	access	6,12,20	E1061-66501
Analog	Analog	analog	6,12,20	E1121-66526
	Ana_DD	analog double density	2,6,12,20	E4000-66542
	Ana_DD2	analog double density	2,6,12,20	E4000-66551
ASRU	ASRU_C	asru c revision	2,6,12,20	03066-66532
Control	Ctl_Xt	control xt	2,6,12,20	E4000-66512
	Ctl_Xtp	control xtp	2,6,12,20	E9900-66504
Hybrid	H_PpuStd	hybrid standard	6	E4045-66527
	H_StdDD	hybrid standard double density	6	E4000-66540
	H_StdDD2	hybrid standard double density	6	E4000-66550
	H_PpuDD	hybrid standard double density	6	E4000-66546
	HPpuDD2	hybrid standard double density	6	E4000-66550
	H_AdvDD	hybrid advanced double density	12	E4000-66544
	HAdvDD2	hybrid advanced double density	12	E4000-66550

Table 2-15 MS Windows supported cards with DGN names, cards <keywords> statements, pattern application rates and part numbers (continued)

	H_HA_DD	hybrid high accuracy double density	20	E4000-66545
	HHADD2	hybrid high accuracy double density	20	E4000-66550
	HVal_32	hybrid value	2	N1122-66502
	HStd_32	hybrid standard double density 32	6	E9900-66502
	HAdv_32	hybrid advanced double density 32	12	E9900-66502
	H_HA_32	hybrid high accuracy double density 32	20	E9900-66502
	HPpu_32	hybrid high accuracy double density 32	20	E9900-66502

DUT Power Supplies

This section contains:

- [Voltage Ranges, 2-45](#)
- [Module Mappings, 2-45](#)
- [DUT Power Supplies Allowed, 2-45](#)
- [GPIO Addresses and Device Files, 2-46](#)

Voltage Ranges

DUT power supplies are set at the factory in one of two configurations:

- Option 220 for line voltages of 200–220 volts.
- Option 240 for line voltages of 230–240 volts.

DUT Power Supplies Allowed

[Table 2-16](#) lists the DUT the power supplies allowed.

Table 2-16 DUT power supplies allowed

Product No.	Model No.	Description
44940A	6624A	4 outputs: 2 @ 0-7 V, 0-5 A or 0-20 V, 0-2 A and 2 @ 0-20 V, 0-2 A or 0-50 V, 0-0.8 A
44941A	6621A	2 outputs: 0-7 V, 0-10 A and 0-20 V, 0-4 A
E4034A	6634A	1 output: 1-100 V, 0-1 A
E3784A	6642A	1 output: 0-20 V, 0-10 A

Module Mappings

[Table 2-17](#) on page 2-46 lists the default DUT power supply mappings for each module.

The commented ("!") statements illustrate that a power supply number (1 through 24) cannot be assigned more than once in a testhead, and a channel number (1 through 6) cannot be assigned more than once in a module.

For 307X systems with a support bay, if it is necessary to determine which DUT power supply is wired to which module, the DUT/ASRU cables E4000-61602 are labeled on both ends with the module numbers to which they are routed.

Agilent 317X systems use cable numbers E4000-61606 and E1170-61607.

Table 2-17 Default DUT power supply mappings for each module (rear view of testhead)

Module 0	Module 2
supplies hp6624 13 to 16 asru channels 1 to 4	! supplies hp6624 5 to 8 asru channels 1 to 4
! supplies hp6621 13 to 14 asru channels 1 to 4	supplies hp6621 5 to 6 asru channels 1 to 4
! supplies hp6624 23 to 24 asru channels 5 to 6	! supplies hp6624 19 to 20 asru channels 5 to 6
supplies hp6621 23 asru channels 5 to 6	! supplies hp6621 19 asru channels 5 to 6
! supplies hp6634 23 asru channels 5	supplies hp6634 19 asru channels 5
! supplies hp6634 24 asru channels 6	supplies hp6634 20 asru channels 6
! supplies hp6642 23 asru channels 5 to 6	! supplies hp6642 19 asru channels 5 to 6
Module 1	Module 3
supplies hp6624 9 to 12 asru channels 1 to 4	supplies hp6624 1 to 4 asru channels 1 to 4
! supplies hp6621 9 to 10 asru channels 1 to 4	! supplies hp6621 1 to 2 asru channels 1 to 4
! supplies hp6624 21 to 22 asru channels 5 to 6	supplies hp6624 17 to 18 asru channels 5 to 6
! supplies hp6621 21 asru channels 5 to 6	! supplies hp6621 17 asru channels 5 to 6
supplies hp6634 21 asru channels 5	! supplies hp6634 17 asru channels 5
supplies hp6634 22 asru channels 6	! supplies hp6634 18 asru channels 6
! supplies hp6642 21 asru channels 5 to 6	! supplies hp6642 17 asru channels 5 to 6

GPIB Addresses and Device Files

If the DUT power supplies are functional, a supply's GPIB address can be determined by tracing the cabling to determine which supply is connected to the module.

If the supply has a front panel and is accessible, the GPIB address can be read from the front panel of the supply.

Table 2-18 lists DUT power supply GPIB addresses and device files. See **If a DUT Power Supply is Replaced** on page 2-40 for more information about DUT power supply GPIB addresses.

NOTE

The customer has the flexibility to modify the DUT power supply GPIB addressing.

Table 2-18 DUT power supply GPIB addresses and device files

Power Supply Connection	GPIB Address	Device File
Module 0, asru channels 1-4	22	\$AGILENT3070_ROOT/dev/ps0
Module 1, asru channels 1-4	23	\$AGILENT3070_ROOT/dev/ps1
Module 2, asru channels 1-4	24	\$AGILENT3070_ROOT/dev/ps2
Module 3, asru channels 1-4	25	\$AGILENT3070_ROOT/dev/ps3
Module 0, asru channel 5 or 5-6	26	\$AGILENT3070_ROOT/dev/ps4
Module 0, asru channel 6	27	\$AGILENT3070_ROOT/dev/ps5
Module 1, asru channel 5 or 5-6	28	\$AGILENT3070_ROOT/dev/ps6
Module 1, asru channel 6	29	\$AGILENT3070_ROOT/dev/ps7
Module 2, asru channel 5 or 5-6	1	\$AGILENT3070_ROOT/dev/ps8
Module 2, asru channel 6	2	\$AGILENT3070_ROOT/dev/ps9
Module 3, asru channel 5 or 5-6	3	\$AGILENT3070_ROOT/dev/ps10
Module 3, asru channel 6	4	\$AGILENT3070_ROOT/dev/ps11

To Change DUT Power Supply GPIB Addresses

For 307X systems only where the power supplies are mounted in a support bay:

- Open the support bay and find the correct power supply.

Systems without support bays have the power supplies mounted in the testhead:

- Panels must be removed from the testhead in order to access the front panel of the power supplies.

To change the GPIB address, press **ADDR** (beside the display), enter the desired address on the **ENTRY keypad**, and then press **ENTER** on the **ENTRY keypad**.

NOTE

If a power supply is split between two modules, the default GPIB address (and device file) is the one for the lower-numbered module.

Controller Cables and Devices

X2000 Controller

See:

[Figure 2-2](#) on page 2-50

[Table 2-19](#) on page 2-51

X2100 Controller

[Figure 2-3](#) on page 2-53

[Table 2-20](#) on page 2-54

IPC Controller

[Figure 2-4](#) on page 2-56

[Table 2-21](#) on page 2-57

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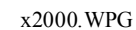


Table 2-19 X2000 controller cables and devices

Cables	Part No.	Description
A	E4000-61628	Control Cable
B	8120-6713	Footswitch Extension Cable, RJ-11
C	8120-8728	LAN Cable, RJ-45 to RJ-45
D	E9927-61607	4-meter GPIB Cable (for TAMS 70488-10 card)
E	8120-3445	1-meter GPIB Cable
F	03066-61629	Strip Printer Cable, RS-232, DB9(f) to DB25(m) cross-conn., 3-m
G	8120-6751	Bar Code Scanner Cable
H	Not Used	Not Used
I	03066-61640	Video Extension Cable (1 for 327X, 2 for 307X / 317X)
J	D2800-80006	Video Cable
K	8120-6794	Keyboard / Mouse Extension Cable
L	8120-5371 or . . .	6-meter LAN Cable, BNC to BNC (for 307X and 317X) or . . .
	8120-3543	2-meter LAN Cable, BNC to BNC (for 327X)
M	E4000-61630	LAN Cable, BNC to SMB for ControlXT/XTP Cards
N	E4000-61629	LAN Cable, SMB to SMB for ControlXT/XTP Cards
O	8120-1763 2 ea. (327X) or 8120-1763 + 8120-4188 (307X and 317X) power cords	

Table 2-19 X2000 controller cables and devices (continued)

Devices	Part Number	Description
1	44902-60000	Footswitch with Cable
2	E4000-62102	Footswitch Adapter
3	0950-2946	Bar Code Scanner Wedge (optional) (p/o E3786A)
4	E9900-69301	NEC MultiSync LCD Flat Panel Display
5	1250-0207	50-ohm BNC Load / Termination
6	1250-2076	50-ohm SMB Load / Termination
7	A4030E	Keyboard and Mouse
8	1250-3154 1250-3156	Digi 77000707 EIA-232 AccelePort 8p controller PCI card Digi 76000527 EIA-232 AccelePort 8p interface box

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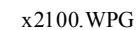


Table 2-20 X2100 controller cables and devices — Series 3

Cables	Part No	Description
A	E4000-61628	Control Cable
B	8120-6713	Footswitch Extension Cable, RJ-11
C	8120-8728	LAN Cable, 1-meter, RJ-45 to RJ-45
D	10833C	4-meter GPIB Cable
E	10833A	1-meter GPIB Cable
F		Optional ASSET Boundary-scan PCI-400 Controller Card, cable and BSI Card
G	03066-61629	Strip Printer Cable, RS-232, DB9(f) to DB25(m) cross-conn., 3-m
H	03066-61640	Video Extension Cable (1 for 327X, 2 for 307X / 317X)
K	8120-6794	Keyboard / Mouse Extension Cable
L	8120-3543	2-meter LAN Cable, BNC to BNC
M	E4000-61630	LAN Cable, BNC to SMB for ControlIXT/XTP Cards
N	E4000-61629	LAN Cable, SMB to SMB for ControlIXT/XTP Cards

Table 2-20 X2100 controller cables and devices — Series 3 (continued)

Devices	Part No	Description
1	44902-60000	Footswitch with Cable
2	E4000-62102	Footswitch Adapter
3	E9900-69302	NEC MultiSync 1525 LCD Flat Panel Display
4	1250-0781 1250-0207 1250-2076 1252-1650	BNC T 50-ohm BNC Load/Termination 50-ohm SMB Load/Termination Hook & Loop Insulator (protects T from accidental grounding)
5	E9900-68700	NETGEAR EN108 10Base-T Hub with 0950-3612 power supply
6	0960-2151	PSC bar code scanner with cable
7	8121-0572	LAN coupler

Figure 2-4 IPC controller cabling diagram

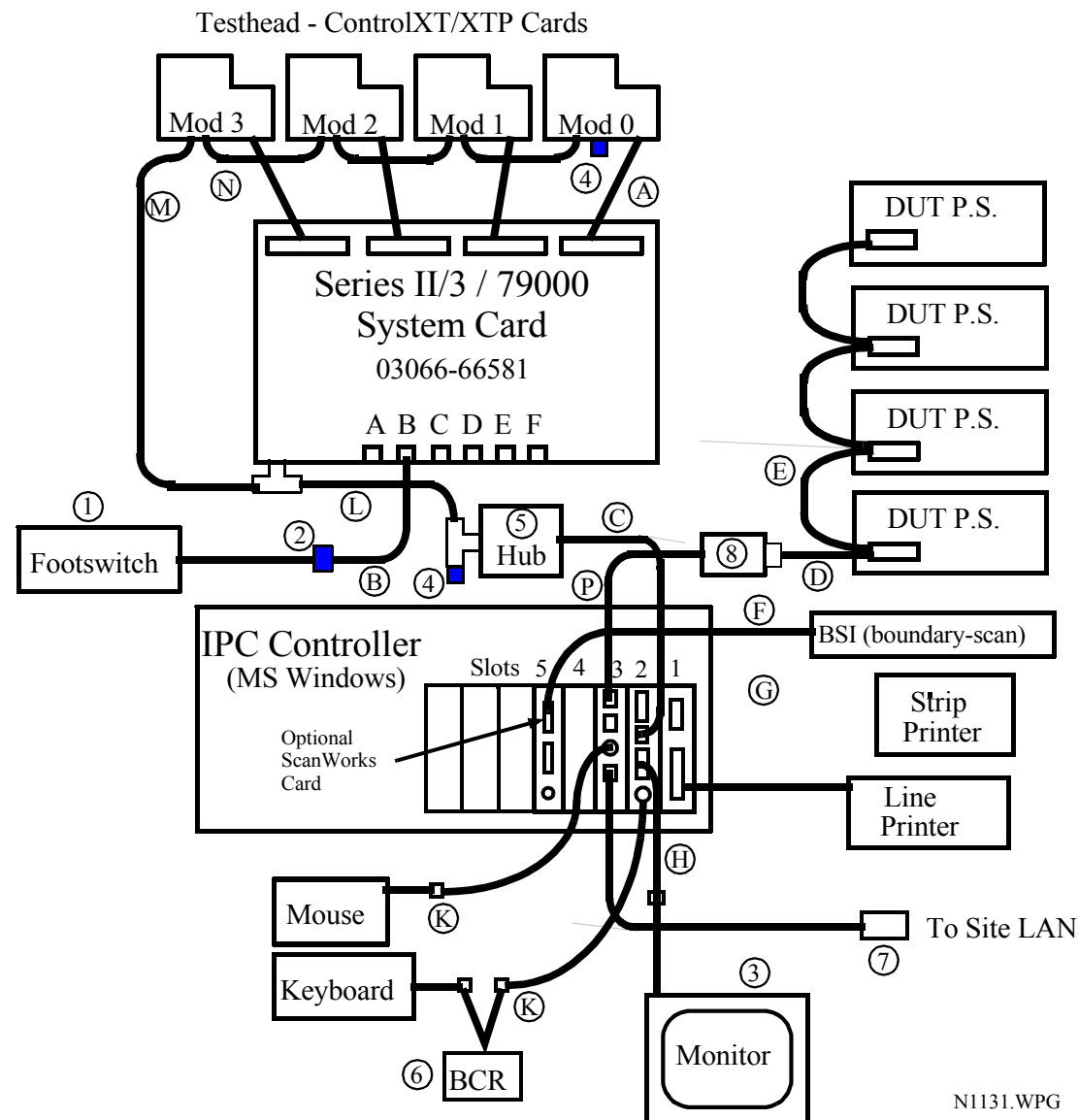


Table 2-21 IPC controller cables and devices — Series 3

Cables	Part No	Description
A	E4000-61628	Control Cable
B	8120-6713	Footswitch Extension Cable, RJ-11
C	8120-8728	LAN Cable, 1-meter, RJ-45 to RJ-45
D	10833C	4-meter GPIB Cable (on older IPC controllers, this cable plugged into a GPIB Card in slot 4)
E	10833A	1-meter GPIB Cable
F		Optional ASSET Boundary-scan PCI-400 Controller Card, cable and BSI Card
G	03066-61629	Strip Printer Cable, RS-232, DB9(f) to DB25(m) cross-conn., 3-m
H	03066-61640	Video Extension Cable (1 for 327X, 2 for 307X / 317X)
K	8120-6794	Keyboard / Mouse Extension Cable
L	8120-3543	2-meter LAN Cable, BNC to BNC
M	E4000-61630	LAN Cable, BNC to SMB for ControlXT/XTP Cards
N	E4000-61629	LAN Cable, SMB to SMB for ControlXT/XTP Cards
P		Cable, part of 82357A USB/GPIB Adapter

Table 2-21 IPC controller cables and devices — Series 3 (continued)

Devices	Part No	Description
1	44902-60000	Footswitch with Cable
2	E4000-62102	Footswitch Adapter
3	E9900-69302	NEC MultiSync 1525M LCD Flat Panel Display
4	1250-0781 1250-0207 1250-2076 1252-1650	BNC T 50-ohm BNC Load/Termination 50-ohm SMB Load/Termination Hook & Loop Insulator (protects T from accidental grounding)
5	E9900-68700	NETGEAR EN108 10Base-T Hub with 0950-3612 power supply
6	0960-2151	PSC bar code scanner with cable
7	8121-0572	LAN coupler
8	82357-66501	Agilent 82357A USB/GPIB Adapter

Private LAN and Serial Port MUX

This section contains:

- [Introduction](#), 2-59
- [IP Addresses](#), 2-59
- [Hardware Addresses](#), 2-59
- [Verify Communication to the Testhead](#), 2-59
- [Serial Port MUX](#), 2-60

Introduction

System and ControlXT/XTP Cards are essentially computers that communicate with each other over a private LAN.

The testhead controller contains a dedicated LAN card to support the private LAN.

IP Addresses

A [sample hosts file](#) on page 2-39 indicates the IP addresses used on the private LAN. These IP addresses are the same from one system to the next.

NOTE

The private LAN card's IP address (in the MS Windows controller) is 10.3.112.10 with a subnet mask of 255.255.255.0

Hardware Addresses

System and ControlXT/XTP Cards are identified on the private LAN by a fixed, unique hardware address (HA) stored in their ROM(s).

The System Card HA is printed on its sheet-metal panel.

The last four digits of the ControlXT/XTP Card's HA are printed (in hexadecimal) on the last line of one of its ROM labels.

Verify Communication to the Testhead

To verify communication to the testhead (system card), use the `ping` command:

- 1 Power-on the testhead.
- 2 At a DOS window prompt, enter:

```
ping 10.3.112.2
```

If the communication test fails, check that the LAN ports in the testhead are terminated properly. [Controller Cables and Devices](#) on page 2-49 shows locations of the LAN terminations.

Serial Port MUX

NOTE

Some controllers includes a serial port MUX; the IPC controller does not.

This 8-port EIA-232 serial MUX adapter provides eight 8-pin RJ-45 EIA-232 ports for supporting PPU, JOT, and other optional serial-controlled devices.

CAUTION



Many SCSI adapters use the same HD-68 connector type as the AccelePort Xp. DO NOT plug SCSI devices into the Digi connector, and DO NOT plug Digi peripheral cables into SCSI adapters. Damage can result.

Connect cabling for serial devices as listed in [Table 2-22](#) or communication errors can result.

Table 2-22 Connector box MUX assignments

Serial Port	Reserved For
1	Pay-Per-Use (PPU)
2	JOT Board Handler
3—4	JOT Bar Code Readers
5—8	Other EIA-232 Devices

Troubleshooting LAN Port Connections

NOTE

This only applies to the IPC (industrial PC) controller.

If you replace the IPC in your system — or the single-board computer (SBC) in the IPC — and re-connect the LAN cables to the IPC exactly as they were before, communication to the testhead or site LAN could be broken. This is because the mapping of the LAN configuration to the physical ports in the IPC can be different from one IPC to the next (due to different firmware on the SBC).

Simple Solution

In most cases, the solution is simply to swap the LAN cables on the two LAN ports.

If you do this, and communication still doesn't work, the properties of the LAN connections may be set incorrectly.

Setting the LAN Connection Properties

- 1 Disconnect one of the LAN cables from the IPC. Trace the cable so you know whether you are disconnecting the site LAN or testhead LAN.
- 2 Look at the network configuration.

For Windows 2000: Click **Start > Settings > Network and Dial-up Connections**.

For Windows XP: Click **Start > Settings > Control Panel > Network Connections**

You will see two connections:

Local Area Connection

Local Area Connection 2

The one that is disconnected will have a red X or say unplugged (depending on your View mode). This tells you which physical port is mapped to which LAN connection.

- 3 Check the properties of the connections: Right-click on a connection and click **Properties**. The properties should be set as follows:

Local Area Connection (site LAN)

Property: Obtain IP address automatically

Local Area Connection 2 (testhead LAN)

Property: Use the following IP address: 10.3.112.3

- 4 Re-connect the LAN cables and set the connection configurations until the communication works properly. If this still doesn't work, you may need to download drivers; see [Installing Drivers and Configuring LAN Ports](#) on page 2-62.

Installing Drivers and Configuring LAN Ports

If you have replaced the IPC controller or the single-board computer (SBC) in the IPC, and you can't establish LAN communication using the procedure [Troubleshooting LAN Port Connections](#) on page 2-61, you may need to download LAN and VGA drivers to your IPC and reconfigure the LAN ports.

This section contains:

[Installing the Graphics Driver, 2-62](#)

[Installing the Primary LAN driver, 2-62](#)

[Installing the Secondary LAN Driver, 2-63](#)

[Configuring the Testhead LAN IP Address, 2-64](#)

Installing the Graphics and LAN Drivers

Insert the CD-ROM that came with your IPC or SBC, called **Advantech Industrial Computers Drivers, Utilities**, into the DVD-ROM drive on your IPC.

Installing the Graphics Driver

- 1 Click the **PCA-6186** tab.
- 2 Click the **W2K XP** button under **VGA Drivers**.
- 3 At **Intel Extreme Chipset Graphics Driver Software - InstallShield Wizard**, click **Next**.
- 4 At **Welcome to the InstallShield Wizard for Intel Extreme Graphics Driver Software**, click **Next**.
- 5 At **License Agreement**, click **Yes**

- 6 At **InstallShield Wizard Complete**, click **Yes, I want to restart my computer now**.
- 7 Click **Finish**.
- 8 Login as **Administrator** and click **OK**.
- 9 Set the Display Properties:
 - a Right-click the desktop.
 - b Click **Properties**.
 - c Change **Colors** to **High Color (16 bit)**.
 - d Change **Screen Area** to **1024x768**.
 - e Click **OK**.
 - f Under **Display Properties**, click **OK**.
 - g Under **Monitor Settings**, click **Yes**.
 - h Click the monitor icon on the right side of the icon tray.
 - 1) Click **Graphics Options**.
 - 2) Click **Tray Icon**.
 - 3) Click **Disable**.

Installing the Primary LAN driver:

- 1 Click **Start > Run**.
- 2 Type **D:\Setup.exe** and click **OK**.
- 3 Click the **PCA-6186** tab.
- 4 Under **LAN Drivers**, click **Manual**.

- 5 In Explore, navigate to the **Setup** file and double-click **Setup**.
- 6 At **Welcome to the InstallShield Wizard for Intel PRO Intelligent Installer**, click **Next**.
- 7 At **License Agreement**, click **I accept the terms in the license agreement**. Then click **Next**.
- 8 At **Setup Type**, select **Typical**. Then click **Next**.
- 9 At **Ready to Install the Program**, click **Install**.
- 10 At **Wizard Completed**, click **Finish**.
- 11 At **Results**, click **OK**.
- 12 Click **X** in the right corner to close the window.
- 13 Click **Start > Shutdown > Restart > OK**.
- 14 Login as **Administrator** and click **OK**.

NOTE

The following three steps are only necessary if the SBC has the newer firmware.

- 15 Click **Start > Settings > Network and Dial-up Connectons**.
- 16 Under **Driver name for Local Area Connection is:**, select **Intel (R) PRO/100 VE Network Connection**.
- 17 Under **Driver name for Local Area Connection 2 is:**, select **Intel (R) PRO/100 M Netowrk Connection 2**.

Installing the Secondary LAN Driver

- 1 Right-click **My Computer**.
- 2 Click **Manage > Device Manager**.
- 3 Under **Other Devices**, click **Ethernet Controller > Properties > Reinstall Driver**.
- 4 Under **Welcome to the Upgrade Device Driver Wizard**, click **Next**.
 - a Under **Install Hardware Device Drivers**, select **Display a list of hte known drivers for this device so that I can choose a specific driver** and click **Next**.
 - b Under **Hardware Type**, select **Network Adapters** and click **Next**.
 - c Under **Select Network Adapter Manufacturer:**, select **Intel**.
 - d Under **Network Adapter:**, select **Intel 8255x-based PCI Ethernet Adapter (10/100) (Intel)** and click **Next**.
 - e Under **Update Driver Warning**, click **Yes**.
 - f Under **Start Device Driver Installation**, click **Next**.
- 5 Under **Completing the Upgrade Device Driver Wizard**, click **Finish > Close**.
- 6 Remove the CD from the drive.
- 7 Click **Start > Shutdown > Restart > OK**.
- 8 Login as **Administrator** and click **OK**.

Configuring the Testhead LAN IP Address

- 1 Click **Start > Settings > Network and Dial-up Connections**.
- 2 Right-click **Local Area Connection 2**.
 - a Click **Properties**.
 - b Under **Connect Using:**, select **Intel 8255x-based PCI Ethernet Adapter (10/100) (Intel)**.
 - c Highlight **Internet Protocol (TCP/IP)**.
 - d Click **Properties**:
 - e Select **Use the following IP address**.
IP address: **10.3.112.10**
Subnet mask: **255.255.248.0**
Click **OK**
 - f Click **OK**.
- 3 Click **X** in the right corner to close the window.
- 4 Click **Start > Shutdown > Restart > OK**.
- 5 Login as **Administrator** and click **OK**.

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E9970-90001 Rev. H 06/2003

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